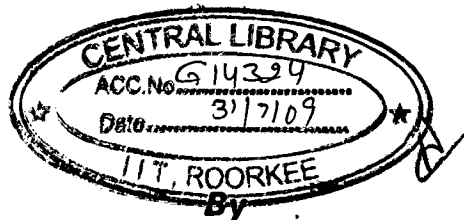


PLANNING FOR REJUVENATION OF COTTAGE INDUSTRIES IN ALIGARH CITY

A DISSERTATION

*Submitted in partial fulfillment of the
requirements for the award of the degree
of*

MASTER OF URBAN AND RURAL PLANNING



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JUNE, 2008


CANDIDATE'S DECLARATION

Certified that this report titled-“**Planning for Rejuvenation of Cottage Industries in Aligarh City**”, which has been done by Mr. Khan Amadur Rahman, in partial fulfillment of the requirements for the award of the post graduate degree in Master of Urban and Rural Planning, in the Department of Architecture and Planning, Indian Institute of Technology Roorkee, Roorkee is an authentic record of my own work carried out during the period from August 2007 to May 2008, under the guidance and supervision of Dr. V. Devadas, Department of Architecture and Planning, Indian Institute of Technology Roorkee, Roorkee, India.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree.

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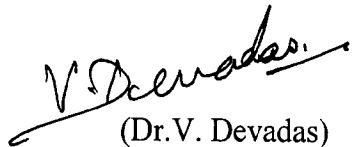
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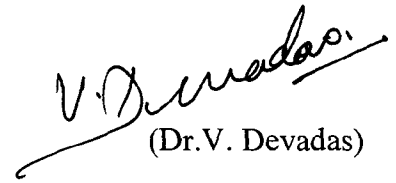
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CHAPTER 1:INTRODUCTION

1. INTRODUCTION

In the age of globalization, economic development is taking place all over the world. India, with its liberal economic policies in the last decade and a half has done wonders in terms of economic growth and development. The opening up of foreign direct investment in the construction sector has led to tremendous increase in facilities and world class infrastructure in the country. The change of policies and work scenario has encouraged many global giants to set up their plants in manufacturing sector in the country. So the market is flooded with foreign goods and one can get better quality products. India, with an overall GDP of more than 1 trillion dollars and economic growth rate of 9% has emerged as one of the largest growing economies in the world. At this juncture it is imperative to have a close look at the system to understand the backwash effects of the system.

There are repercussions to every developmental activity. The introduction of foreign goods in the Indian market has led to loss of market for the indigenous products. The larger multi-national firms are acquiring the small scale units in the country. As a result, many small scale producers and cottage industries have closed down their shops. This led to unemployment among the group of people who were earlier self-employed.

There has been phenomenal growth in the large industry sector but small scale industries still play an important role in the economical development of a developing country like India. It is considered as an engine of growth. The small-scale industries are labour - intensive and provide employment to a large number of people in the country. There are about 34 lakhs small scale industries in India which contribute to 40% of the total production in the industrial sector. It also accounts for 34% of the country's exports. Small scale industries provide employment opportunities to about 186 lakhs people in the country. A large number of this workforce are self- employed and have their own

industrial holdings. The role of the government is just of a facilitator. These enterprises need tiny investments and a little effort to set up and act as employment generator to the local people in their true sense. Development of small scale industries also leads to creation of a pool of small time entrepreneurs which is a resource for any developing country.

Table 1.1: Position of small scale industries in India as in 2000-2001

S.NO.	DESCRIPTION	QUANTITY
1.	No. of small scale industrial units	Rs. 33.7 lakhs
2.	Production at current prices	Rs. 6,45,496 crores
3.	Employment	186 lakhs persons
4.	Exports	Rs. 59,978 crores

Source: Village and small industries, Ministry of micro, small and medium industries, Govt. of India

REASONS FOR SELECTION OF THE STUDY AREA

The following are the reasons for the selection of Aligarh as Study area:

1. Aligarh has rich cultural heritage.
2. It is an important industrial town of the state of Uttar Pradesh.
3. It has a long history of cottage industrial development dating back to more than 200 years.
4. Cottage industry is the backbone of the economy of the city.
5. It is providing employment to a large number of skilled workforce.
6. The adverse effects of liberal economic policies and globalization can be seen in Aligarh.

7. The problem of closure of cottage industries and small scale manufacturing units is still in its initial stage and can be solved by employing effective policies and measures.
8. If the problem is not taken care of it is likely to affect other sectors of the economy as well.

3. IDENTIFICATION OF PROBLEM

The industries face two types of problem in Aligarh. One is related to spatial planning and the other concerns technological know-how. The most important problems faced by the city pertaining to the industrial development are presented as below:

1. Improper spatial planning with no concern to the social aspects of the city has been a major factor in the failure of Talanagari and has affected the much needed thrust to the industries.
2. Lack of technological up gradation has affected the lock industry.
3. Aligarh is loosing out its monopoly in the national market due to the entry of Chinese locks and national players like Godrej.
4. The high-handedness of the bureaucracy.
5. The initiatives by the government have not been encouraging.
6. Closure of a number of small scale units and cottage industries.
7. Unemployment among the lock industry workers.
8. Loss of talent-pool in the form small scale entrepreneurs.

4. OBJECTIVES

The following objectives are framed in the investigation. They are as follows:

1. To assess the physical, socio-economical, environmental, and infrastructural condition in the study area.
2. To analyze the industrial policy of Aligarh city.
3. To assess the present industrial situation at Aligarh city.
4. To understand the role of cottage industries in industrial development in the city.
5. To understand the role of institutions (national small industries corporation, state small industries corporation etc.) in industrial development in the city.
6. To study the control parameters which decide the functions of the city.
7. To assess the demand and supply of resources and infrastructure for industrial development.
8. To evolve plausible policies for cottage industry in the city in a viable, feasible and environment-friendly manner.

5. CONCEPT

Systems concept shall be applied in the investigation. A system consists of various sub systems. The sub systems of a system are interrelated and interdependent. The problem in any of the sub system leads to problem in the entire system. In order to solve the problem in a system one should understand the sub systems of a system, their interrelationship and interdependence. The various subsystems of a city system, their interrelationship and interdependence shall be studied in the investigation to evolve a strategy for future development of cottage industries in the city.

8. SCOPE

The present work focuses on the role of cottage industries in the economic development of the country in general and a city in particular. The investigation shall concentrate on the development of cottage industries in Aligarh city. The effect of central government policies on the cottage industrial development shall be assessed. The efforts by the state

government for cottage industrial development in Aligarh city shall be analysed. As development of cottage industry directly and indirectly affects various other aspects of city development, they shall also be studied, assessed and analysed.

Aligarh has certain peculiar social conditions, which became a major factor in the failure of earlier industrial development efforts. These aspects shall be taken care of in the present investigation to make the developmental plan socially acceptable.

7. RESEARCH DESIGN:

7.1: METHODOLOGY

The methodology for the study shall be as follows:

7.2: DATA

The data is to be collected from two sources:

Secondary sources: these include the data collected from the Development Authority, Municipal Corporation, National Small Industries Corporation, State Small Industries Corporation, internet, newspapers, magazines, journals and other governmental documents.

Primary sources: These include the household surveys, photographic surveys and the observations.

7.3: TOOLS AND TECHNIQUES

The following tools and techniques shall be applied:

7.3.1: SURVEY TOOLS AND TECHNIQUES

Questionnaires, schedules, digital camera, video camera and other relevant survey tools and appropriate sampling techniques shall be employed for the selection of the respondents.

7.3.2: ANALYTICAL TOOLS AND TECHNIQUES

Software such as MS office, AutoCAD, Photoshop; hardware, code sheets etc. and suitable analytical techniques shall be employed.

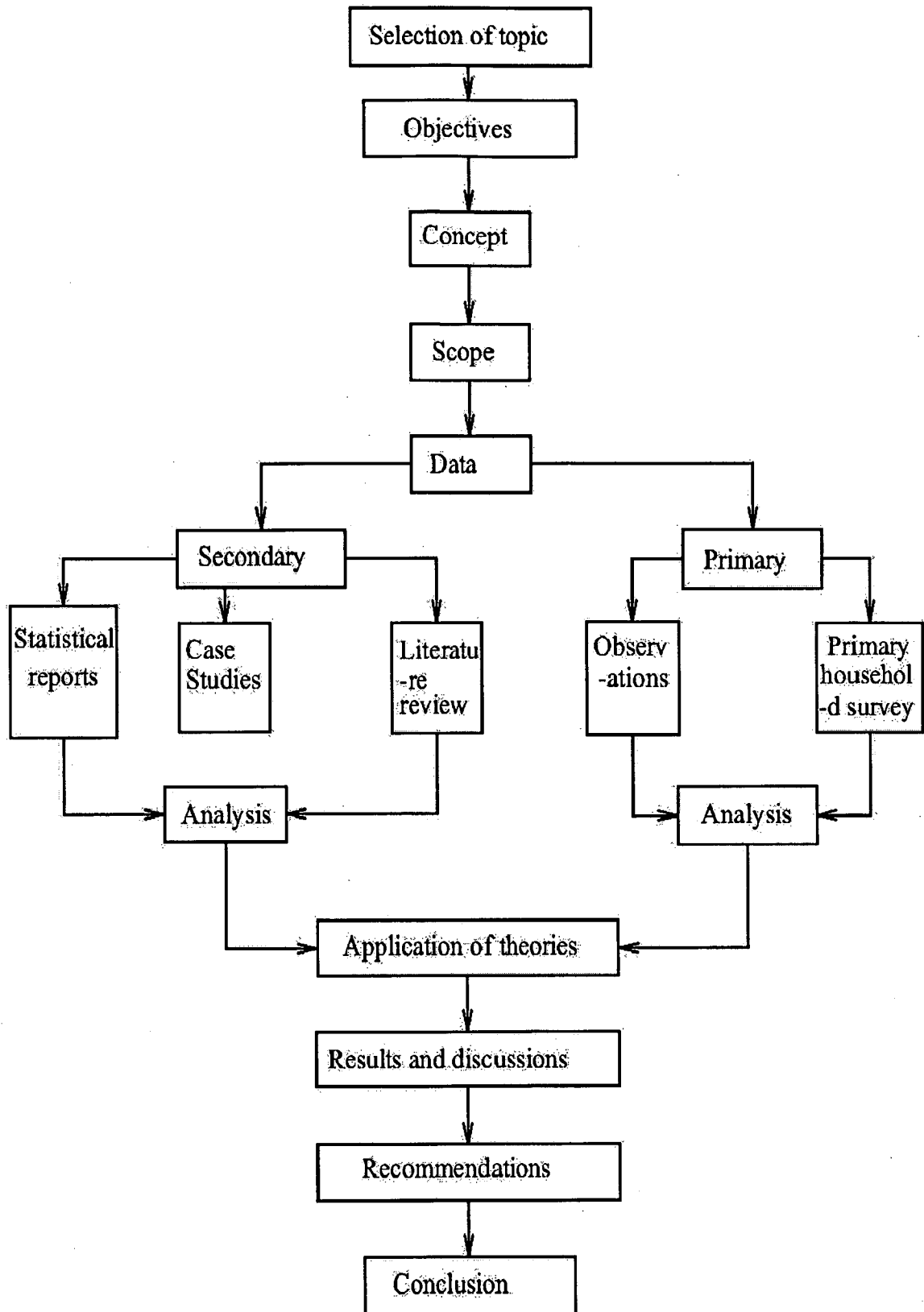


Fig1.1 Research design

7.4: ANALYSIS

The data collected by the sample surveys shall be thoroughly analyzed.

7.5: RESULTS AND DISCUSSIONS

The results thus obtained shall be discussed by applying suitable theories.

7.6: APPLICATION OF THEORIES

Appropriate theories shall be employed to understand the future of the system and the level of development of the system.

7.7: RECOMMENDATIONS

Plausible recommendations shall be made based on the results and discussions.

7.8: LIMITATIONS

The cottage industries are spreaded in clusters in different areas of the city but the majority of them are located in the upper fort and its surrounding areas. The residents and workers in the upper fort area are the worst hit by the closure of small scale and cottage industries. So the primary surveys shall concentrate on the plight of industries in the upper fort area. Besides this, primary surveys at Talanagari and Industrial estate at exhibition ground shall also be conducted.

7.9: CONCLUSION

The study shall conclude with plausible recommendations made in the study area to be implemented in the future.

CHAPTER 2: LITERATURE STUDY

2.1: INTRODUCTION

According to Wikipedia (web encyclopedia)-“Industry is a segment of the economy concerned with the production of goods and services. The industry in its present form originated in the 1800’s with the advent of technology.”

2.2: INDUSTRY SECTORS AND CLASSIFICATION

There are many different kinds of industries, and they are usually divided into different classes or sectors. The primary sector of industry is agriculture, mining and raw material extraction. The secondary sector of industry is manufacturing - which is what is colloquially meant by the word “industry”. The tertiary sector of industry is service production. The industries can be classified as follows:

- Light industry - heavy industry
- Labor-intensive industry - capital-intensive industry
- By product: chemical industry, petroleum industry, meatpacking industry, hospitality industry, food industry, fish industry, software industry, paper industry, entertainment industry, semiconductor industry, cultural industry, etc.

2.3: COTTAGE INDUSTRY

According to Wikipedia –“A cottage industry (also called the Domestic system) is an industry which includes many producers, working from their homes, typically part time. Some industries which are usually operated from large centralized factories were cottage industries before the Industrial Revolution. The business operators would travel around, buying raw materials, delivering it to people who would work on them, and then collecting the finished goods to sell, or typically to ship to another market”.

Following are some of the definitions of cottage industry taken from the internet:

1. According to the *wordnet.princeton.edu*

“A small scale industry that can be carried on at home by family members using their own equipment is called cottage industry”.

2. According to the *www.burlington.ca*

“An activity conducted as an accessory use within a single-detached dwelling by one or more of its residents. A cottage industry may include activities such as dressmaking, upholstering, weaving, baking, ceramic-making, painting, sculpting and the repair of personal effects”.

4. According to the *www.co.mendocino.ca.us*

“Cottage Industry means an enterprise which is conducted as an accessory to a residential use and complies with the limitations in the County zoning code. Although a use permit is not required, a business license and other permits such as building or health permits may be required”.

5. According to the *www.onlinewbc.gov*

“Business or industry in which goods are produced primarily in the home of the producer is called a cottage industry”.

2.4: CRITERIA FOR THE CLASSIFICATION OF INDUSTRIES

There are many factors involved in determining the criteria for the classification of industries. The major factors involved in determining the criteria for the classification of industries are as listed below:

1. Number of workers employed.
2. Capital investment.
3. Annual turnover.
4. Nature of goods produced.
5. Techniques of production and management
6. Use of power.

7. Place of work.
8. Market area served and
9. Impact on the environment.

These factors may be used to determine the criteria for the classification of industries, but there are industries which may not fulfill all these criteria. Some Industries may fulfill few of these factors and some other factors may have to be considered to classify them.

2.4.1: NUMBER OF WORKERS EMPLOYED

Classifying the industries based on the Number of workers employed may also vary based on the availability of labour, cost of labour, efficiency of labour, skilled or unskilled labour. In developed countries or in countries with low density of population the availability of labour is always difficult. The cost of labour in such countries is high. Similarly, lesser number of employees may be required to accomplish a project if the labour is skilled. In labour intensive industries more number of personnel are required while in technical industries highly skilled lesser number of employees are needed. So we have to combine this factor with other criteria to come to an actual classification.

2.4.2: CAPITAL INVESTMENT

Capital investment is a major factor which determines the status of an industry. But determining the threshold at which the industry may be classified as large, medium or small scale needs careful consideration. The threshold to classify an industry based on the capital investment depends upon the status of economy of a country, the rate of economic growth, GDP, development potential of the industry, development potential of industries in the country etc.

2.4.3: ANNUAL TURNOVER

Annual turnover indicates the total goods produced in the industry. Large annual turnover of an industry does not mean that the industry is very profitable. An industry may have a large annual turnover but may have very low profit. To determine the profit one has to deduct the capital investment from the total annual turnover. If the result is positive the

industry is in profit, but if the result is negative the industry is in loss. So annual turnover is highly indicative of the status of the industry and is used in classifying them.

2.4.4: NATURE OF GOODS PRODUCED

The goods produced in industries need different amount of labour, capital and technology. So the industries may also be classified based on the goods produced.

2.4.5: TECHNIQUES OF PRODUCTION AND MANAGEMENT

The Technology used for production, which may be latest today, may become primitive after a few years. So it needs to be upgraded continuously. Entrepreneurial skills play an important role not only in the development of the industries but also classifying them. A good managed industry grows rapidly and needs to be upgraded and reclassified from time to time. So the industries may also be classified based on the techniques of production and management.

2.4.6: USE OF POWER

Classification of industries based on use of power was earlier very relevant in developing countries, like India, where electricity was not easily available and most of the small scale and cottage industries had to do without power. In today's time, when power supply is readily available everywhere (though the concept of interrupted power supply is far from being realized), we now find it difficult to use it to classify industries.

2.4.7: PLACE OF OPERATION

Industries may also be classified based on the area of work. Resource based industries need to be near the resource while market based industries need to be placed near the market. Some industries may operate from anywhere in the world like call centre.

2.4.8: MARKET AREA SERVED

The industries may also be classified based on the market of areas served. They can be neighbourhood industries serving the local community, national as well as international industries.

2.4.9: IMPACT ON THE ENVIRONMENT

Based on the impact on the environment the industries may be classified as polluting and non-polluting industries. This type of classification also helps in deciding the location of the industry. The trend today is to go for the non-polluting industries in the developed world. The developing countries are also trying to reduce the impact of industries on the environment. Many international conferences, seminars, and meetings are held every year to monitor the impact of industries on the environment. Efforts are being made globally to classify the industries based on the above mentioned criteria. Many industries that have been polluting the global environment have been banned and their operations are being brought to closure.

2.5: DIFFERENCE BETWEEN COTTAGE INDUSTRY AND SMALL SCALE INDUSTRY

Most of the criteria governing the classification of an industry as small scale or cottage industry are the same. Both the industries have the same characteristics in terms of capital investment, labour employed, entrepreneurial capability, market, etc. So it is difficult to draw definite distinguishing line between these industries. However they differ in terms of technology employed and the nature of goods produced. The modern small scale industries employ advanced production and manufacturing technology and produce sophisticated articles. For the ease of classification the industries with a capital investment of less than 1 crore rupees are termed as small scale industries while the industries that fall under the purview of the Cottage Industries Boards in India are termed as cottage industries. As the criteria for their classification are mostly the same they shall be treated together for the purpose of the study.

2.6: ADVANTAGES OF SMALL SCALE AND COTTAGE INDUSTRY

The following are some of the advantages of small scale and cottage industry:

1. **Development of backward areas:** Owing to the low capital investment and lesser amount of support infrastructure to start the industry they can be dispersed to the less developed areas and generate employment opportunities.

2. **Uniform distribution of income:** The distribution of income is uniform by the promotion of small scale and cottage industries. The fruit of development shall reach to the grassroot level. Equality and harmony is created by the small scale industries. Concentration of wealth in the hands of a few and the phenomenon of creation of rich getting richer and the poor getting poorer is prevented.
3. **Benefits to the consumer:** Large scale manufacturers are unable to create monopoly in the market. Distribution of sources of production leads to introduction of various brands in the market. The consumer has many choices and can go for the cost effective product. This leads to competition in the open market and it is beneficial for the economy. The overall quality of products increase and the prices go down. The ultimate gain is to the consumer.
4. **Adaptability:** The small scale industries can adjust themselves easily according to the changing market situation. They can adapt to suit the requirements of the market. A very small investment and a little effort can do wonders for a dying small scale or cottage industry.
5. **Creation of a pool of skilled labour:** The workers in cottage industry acquire their skills from their family. They do not have any formal training. If necessary they can be updated from time to time by the various government agencies by introducing them to the new technical advancement in their field of production.
6. **Creation of a pool of entrepreneurs:** Small investments and easy loan can motivate people to start their own holdings and so they not only solve their problem of unemployment but also create employment opportunities for the others. In the long run they learn to manage their business and so a pool of small time managers is self generated which is a great asset to any developing country.

7. **Labour intensive:** The small scale and cottage industries are always labour intensive. They not only employ large number of work force but also absorb unskilled labour which in the long run turns into skilled labour. The problem of unemployment in many areas can be solved by opening up small scale and cottage industries in those areas.
8. **Support to large scale industries:** Small scale industries can provide great support to large scale industries by acting as auxiliary units to these industries. Many large scale industries cannot function without the support of small scale industries.

2.7: SMALL SCALE AND COTTAGE INDUSTRIES IN THE FIVE YEAR PLANS

The small scale and cottage industries have played a pivotal role in the development of the country. So they have been given thrust in the five year plans of the country after the independence. The study of the five year plans is necessary to understand the growth of the small scale and cottage industry, the problems faced by the industries from time to time and the solutions proposed to overcome them. So a study of the ten five year plans implemented so far has been presented below.

2.7.1: I FIVE YEAR PLAN

Industries which were not required to be registered under the Factory Act were known as cottage and small-scale industries. Small scale industries had been divided into three groups, namely,

1. Those in which small-scale production has certain advantages and is not affected by large-scale industry to any great extent.
2. Those in which small-scale industry is concerned with the manufacture of certain parts or with certain stages of production in a manufacturing- process in which the predominant role is that of large-scale industry and,
3. Those in which small-scale industry has to meet the competition of the corresponding large-scale industry.

Among the examples of small industries which were largely able to hold their own may be mentioned the manufacture of locks and padlocks, wax candles, buttons, chappals and badges.

Of the third type, namely, those which are seriously affected by competition from large-scale industry, the best example was the handloom industry. In 1951 it was reckoned that there were 3 million handlooms at work, in addition to about 23,000 power looms. The entire subject of 'protection' for the handloom industry in relation to the textile industry was being reviewed by a committee which had been appointed by the Central Government. However, as an urgent interim measure for the relief of the industry the principle of reservation in favour of the handloom weavers had been extended.

Thus the policy for these industries was based on the premises that there should be a common production programme for an industry as a whole, including both the large as well as the small-scale units. The nature of the common production programme would of course have to vary with each industry. In some cases, the essential points were that the supply of the basic raw-materials had to be assured, a sphere of production earmarked and perhaps a small cuss enforced on the large-scale industry, either with a view to reducing the difference in the cost of production or merely with the object of providing funds for improving the efficiency and organization of small-scale units. In other cases, a common production programme takes the form of a closely integrated programme in which the large and the small units are essentially complementary. The principle of reservation of a sphere of work was implied in both cases.

Other important steps taken during the first plan period were as follows:

- Substantial finance for the development of village and small industries
- Building up of a network of all-India Boards to deal with the problems of the handloom industry, khaki and village industries, handicrafts, small-scale industries, sericulture and the coir industry.

- Certain classes of stores were reserved exclusively for purchase from village and small industries and price differentials were allowed to them over the products of large-scale industries.

2.7.2: II FIVE YEAR PLAN

The strengthening of administrative and organizational machinery and the expansion of assistance programmes combined with measures for giving an assured market for certain industries produced conditions favorable to the development of village and small industries. In the Second Plan, the scale of assistance for all these purposes was considerably enlarged, the total anticipated outlay being a little less than Rs. 180 crores as against about Rs. 43 crores in the First Plan. A number of new programmes were also organized. About sixty industrial estates were set up for providing factory accommodation and a number of common facilities for the promotion of small scale industries. Apart from these various programmes of assistance, steps were taken to provide a more assured market for the products of some of the industries. It was also decided that there should be no further expansion in certain large scale industries like vegetable oils, rice milling, and leather footwear, match, etc. where the existing capacity was not being already fully utilized.

2.7.3: III FIVE YEAR PLAN

In the Third Plan, the main objectives of the small scale industries programmes were to improve the productivity of the workers, to enlarge the availability of institutional finance and to pay special attention to the growth of small scale industries in rural areas and small towns. The progress was encouraging during the first two years of the Third Plan; then slowed down for various reasons including the shortage of raw materials following the hostilities of 1962 and 1965.

The growth of modern small scale industries had taken place largely over the last decade. Till the end of 1968-69 about 1, 40,000 small scale units had been registered with the States Industries Directorates, as compared to about 36,000 units at the beginning of 1962.

2.7.4: IV FIVE YEAR PLAN

The main aim of the development programmes for small scale industries under the fourth five year plan was the fuller utilization of the capacity already established, intensive development of selected industries including ancillaries and industrial cooperatives and, subject to criteria of feasibility, promotion of the industries in semi-urban, rural and backward areas. A phased program of modernization of machinery and equipment was undertaken initially for a group of selected industries such as machine tools, foundry and re-rolling. Schemes were formulated for the training and financial assistance to technically qualified persons so as to enable them to set up industries.

For promoting the programmes outlined above, the Small Scale Industries Development Organization including the Small Industries Service Institutes were strengthened with technical staff and provided with the equipment required for testing and other facilities. The State Industries Directorates and Small Industries Corporations were also adequately strengthened. The scheme for supply of machines on hire-purchase terms by the National Small Industries Corporation and States Small Industries Corporations were expanded with the assistance of banking institutions.

2.7.5: V FIVE YEAR PLAN

Small scale industries were redefined to include those manufacturing and repairing units as have investment in plant and machinery up to Rs. 20 lakhs (and in the case ancillary units up to Rs. 25 lakhs).

The objectives of the programmes for the development of small scale industries in the preceding plan periods had been to generate large scale employment opportunities on a decentralized and dispersed basis, to upgrade the existing levels of skills of artisans as well as quality of their products, and to step up production both for mass consumption and export. To achieve these objectives, the earlier Plans envisaged promotion and development of entrepreneurship backed by a package of consultancy services, improvement in production techniques, institutional support in respect of supply of credit and raw materials, formulation of common production programmers, various incentives

for organizing industrial cooperative societies, rebate on sales of handloom and khaki, etc.

2.7.6: VI FIVE YEAR PLAN

The village and small scale industries sector was divided into eight sub-sectors, namely,

1. Khaki,
2. Village Industries,
3. Handlooms,
4. Sericulture,
5. Handicrafts,
6. Coir,
7. Small Scale Industries and
8. Power looms.

While the last two represented the modern small industries, the other six sub-sectors constituted traditional industries. Modern small scale industries and power looms use modern technologies and were mostly urban oriented usually generating full time employment and register comparatively faster growth whereas the traditional industries are mostly rural and semi-urban in character which sustain and create employment opportunities (both part and full time), increase income generation and preserve craftsmanship and art heritage of the country.

To facilitate modernization and achieve rapid growth in the sector, the upper limit on investment (in plant and machinery) had been raised in respect of small scale units from Rs. 20 lakhs to Rs. 35 lakhs and in the case of ancillary units from Rs. 25 lakhs to Rs. 45 lakhs. Promotion of industries in this dispersed sector primarily fell within the responsibility of the State Governments. The Centre, however, supplemented their efforts.

The small scale industries had achieved the targets in terms of output, employment and exports. However, some of the long term objectives set for the village and small

industries sector were not achieved. The modern small industries had not dispersed widely; most of these are concentrated in developed states and within these states also, a few areas which are large cities, developed urban concentrations or industrial complexes account for most of the activity. In the matter of credit availability also, while inclusion of small industries in the 'priority' sector had helped in the increased flow of bank finance, its spread had not been uniform.

2.7.7: VII FIVE YEAR PLAN

Objectives defined for the village and small industries sector under the seventh five year plan were as follows:

1. Assist in the growth and widespread dispersal of industries;
2. Increase the levels of earning of artisans;
3. Sustain and create avenues of self-employment;
4. Ensure regular supply of goods and services through use of local skills and resources;
5. Develop entrepreneurship in combination with improved methods of production through appropriate training and package of incentives; and
6. Preserve craftsmanship and art heritage of the country. would constitute the following:

The strategy for achieving the above objectives was as follows:

1. Improve productivity, enhance quality, reduce costs and re-structure product-mix through upgradation of technology and modernization;
2. Optimize utilization of existing capacities through supply of adequate inputs including credit, power and raw materials etc.;
3. Expand share of VSI products in the domestic markets through publicity, standardization, market support and increased participation in the Government purchase programmed;
4. Strengthen the programmers of ancillarisation to establish and improve linkages between large and small industries leading to harmonious growth of the total industrial sector;

5. Promote specialization in production and export-oriented industries;
6. Strengthen and enlarge skill profile and entrepreneurial base and management practices to increase opportunities for self-employment;
7. Improve general levels of welfare of workers and artisans through better working conditions, welfare measures and security of employment.

2.7.8: VIII FIVE YEAR PLAN

Village and small industries sector consisted of two broad sub-sectors, via, modern small industries and traditional industries. With effect from 2nd April, 1991, an industrial unit in which investment in fixed assets in plant and machinery does not exceed Rs.60 lakhs was to be regarded as a small scale undertaking. In the case of industrial units undertaking to export at least 30 per cent of the annual production by the end of the third year from the date of commencement of production, the ceiling of investment was fixed at Rs.75 lakhs. Further, in the case of ancillary industrial undertakings, the ceiling of investment in fixed assets had also been fixed at Rs.75 lakhs. This measure was expected to result in greater technological input and export thrust in the small scale sector.

A policy package for small, tiny and village industries was announced in August, 1991 with the primary objective of imparting more vitality and growth impetus to the sector. The ceiling of investment in the case of "Tiny" enterprises had been raised to Rs.5 lakhs, vocational restrictions on setting of these enterprises had been removed and their scope had been enlarged to include all industry related service and business enterprises. Further, equity participation, not exceeding 24 per cent, by other industrial undertakings, included that by foreign collaborators in the small scale sector had been permitted with a view to encouraging modernization and technological upgradation.

Technological obsolescence was high in small industries. To improve marketability, there was need to induct better and appropriate technology. Marketing was one of the intractable problems of the SSI sector. Marketing assistance through Small Industries Corporations, NSIC, etc, had been able to cover only a very small fraction of turnover in this sector. Industry associations were to be encouraged to form marketing organizations which, besides marketing, will go into the quality aspect of products.

The Growth Centre approach had already been accepted as a suitable measure for industrial dispersal and was under implementation in large and medium industries sector. During the Eighth Plan, establishment of 70 Growth Centers has been envisaged. It was proposed to earmark a certain percentage of developed industrial area for small industries. Besides the growth centre, integrated infrastructure development centre for tiny units in rural and backward areas were to be set up involving the Centre, State Governments and industry associations.

INDUSTRIAL POLICY REFORMS AND MAJOR INITIATIVES

The reforms in the industrial policy under the eighth five year plan that were to affect the small scale and cottage industries were as follows:

- Foreign direct investment policy liberalized.
- National Renewal Fund set up to protect the interest of workers likely to be affected due to restructuring or closure of industrial units.
- Growth Centers Scheme taken up to develop infrastructure in backward areas to promote industrialization.
- To promote development of specific hilly, remote and inaccessible areas, Transport subsidy scheme extended till March, 2000.
- Technology Development Board set up to facilitate development of new technologies and assimilation of imported technologies.

This was followed by a series of reforms introduced in the fiscal, trade and foreign investment policies. With these reforms, the Indian economy in general, and industry in particular, was freed from controls and opened to international competition for integration of Indian economy with the world economy.

A number of policy initiatives were undertaken during the Eighth Plan. The thrust of the new industrial policy was on substantial reduction in the scope of industrial licensing, simplification of procedures, rules and regulations, reforms in the Monopolies and Restrictive Trade Practices (MRTP) Act, reduction of areas reserved exclusively for the public sector, disinvestment of equity of selected public sector enterprises (PSEs),

enhancing limits of foreign equity participation in domestic industrial undertakings, liberalization of trade and exchange rate policies, rationalization and reduction of customs and excise duties and personal and corporate income taxes, extension of the scope of MODVAT etc. The basic objectives are to promote growth, increase efficiency and international competitiveness.

2.7.9: IX FIVE YEAR PLAN

There had been a slow-down in the rate of industrial growth. There were many reasons for this; these include slow pace of investment especially in infrastructural sectors, lack of demand, inadequate availability and poor quality of infrastructure, global recession leading to slow down in international trade, etc.

The areas pertaining to the small scale industry sector that were given special attention in terms of industrial development in the country during the ninth five year plan period were as follows:

- Slow Down in the rate of industrial growth in the recent past.
- Inadequate availability and poor quality of infrastructure.
- Slow down in exports.
- Need to review SSI reservation for critical export industries such as toys, garments and leather goods
- Need for greater flexibility in labour legislation.
- Regional imbalances in industrial development.
- Low investment in domestic R&D; weak linkage of R&D with industry.

2.7.10: X FIVE YEAR PLAN

The various schemes giving impetus to the SSI sector in the tenth five year plan were as follows:

- Enhancement of excise duty exemption limit for SSI units from Rs. 50 laky to Rs.100 laky.
- Increase in composite loan limit to Rs.25 laky.

- Coverage of loans up to Rs.25 lakh under the Credit Guarantee Fund scheme.
- Increase in project cost limit under the National Equity Fund scheme to Rs. 50 lakh.
- Credit linked capital subsidy at 12 per cent of the cost of technological upgradation of SSI units for modernization of SSI units.
- The service and business related small scale units with a maximum investment limit of Rs.10 lakh would also be covered under priority lending
- Enhancement of investment limit to Rs.500 lakh for hi-tech and export oriented sectors.
- Technology Bank would be set up for SSI sector by strengthening the existing Technology Bureau for Small Enterprises (TBSE) of SIDBI.
- One time capital grant of 50 per cent to SSI associations for setting up international-level testing laboratories for SSI.

FOREIGN DIRECT INVESTMENT

Liberalized trade and an open door foreign investment policy ensure efficient allocation of resources. India is an eminently attractive destination for FDI in view of the stability of its democratic polity, rule of law, steadily growing economy, low inflation rate, sizeable domestic market, reservoir of skilled English speaking manpower, well-developed social and economic infrastructure, diversified industrial base and evolved financial/capital market.

INFERENCES

After the study of the five year plans we can understand that the government gave great impetus to the local small scale and cottage industries after independence. It was not only an effort to provide employment to the people in the rural areas but it also helped greatly in preserving the local arts and artisans. The small scale and cottage industries always used primitive techniques. Although many schemes were formed to upgrade these industries but the ground conditions remained unchanged. The workers in these industries remained greatly dependent on the government for the improved instruments and upgradation of the technology.

The articles manufactured in the small scale and cottage industries were protected by the government by restricting their production in the large scale industries. These articles were mostly consumed in the domestic market so there was no great problem of marketing or finding buyers for the products in the market.

This policy continued till the seventh five year plan. But the introduction of the eight plan lead to changing of the ground realities. Liberation of the economy under the eight five year plan lead to introduction of foreign products in the domestic market. The products imported from outside the country were better in quality and cheaper in price as they used advanced technology and were readily consumed by the consumers due to intensive marketing.

The local manufacturers in the heavy and medium industry sector adjusted themselves to the intense competition. They could do this because they had large financial resources to upgrade themselves. But the small scale and cottage industry workers were caught offguard by the change in policy. The economy of the country merged with the world economy and the local workers found themselves to be lagging behind in the stiff competition in the world market. They had no option left but to switch occupations. The above mentioned phenomenon lead to widespread unemployment among the small scale and cottage industry workers across the country.

2.8 POLICIES OF THE CENTRAL GOVERNMENT INDUSTRIAL POLICY, 1991

The government of India decided to provide enhanced support to the small-scale sector so that it flourishes in an environment of economic efficiency and continuous technological upgradation. Foreign investment and technology collaboration was encouraged to obtain higher technology, to increase exports and to expand the production base. Government decided to abolish the monopoly of any sector or any individual enterprise in any field of manufacture, except on strategic or military considerations and open all manufacturing activity to competition. The investment limit for the small scale industry was raised upto rupees 1 crore while that for the tiny industry was raised to 25 lakhs. There were 749 items reserved to be produced in the small scale industry sector.

2.8.1 Comprehensive policy package for Small Scale Industries and Tiny Sector, 2000

Policy Support

- The investment limit for the Tiny Sector will continue to be Rs. 25 lakhs.
- The investment limit for the SSI sector will continue to be at Rs. 1 crore.
- The Ministry of SSI & ARI will bring out a specific list of hi-tech and export oriented industries which would require the investment limit to be raised upto Rs. 5 crores to admit of suitable technology upgradation and to enable them to maintain their competitive edge.

Fiscal Support

- To improve the competitiveness of Small Scale Sector, the exemption for excise duty limit raised from Rs. 50 lakhs to Rs. 1 crore.

Credit Support

- The Small Scale Service and Business (Industry Related) Enterprises (SSSBs) with a maximum investment of Rs. 10 lakhs will qualify for priority lending.
- The composite loans limit raised from Rs. 10 lakhs to Rs.25 lakhs.
- The Department of Economic Affairs will appoint a Task Force to suggest revitalisation/restructuring of the State Finance Corporations.

Infrastructural Support

- The Integrated Infrastructure Development (IID) Scheme will progressively cover all areas in the country with 50 per cent reservation for rural areas.
- A Plan Scheme for Cluster Development will be drawn up.
- Regarding upgrading the Industrial Estates, which are languishing, the Ministry of SSI & ARI will draw up a detailed scheme for the consideration of the Planning Commission.

Marketing Support

- State Industrial Development Organisation will have a Market Development Assistance (MDA) Programme, similar to one obtaining in the Ministry of Commerce & Industry. It will be a Plan Scheme.
- The Vendor Development Programme, Buyer-Seller Meets and Exhibitions will take place more often and at dispersed locations.

2.9 POLICIES OF THE STATE GOVERNMENT

UTTAR PRADESH INDUSTRIAL DEVELOPMENT POLICY

The highlights of the industrial and service sector investment policy 2004 are as follows:

Infrastructure

The following are the important points for the development of the industrial infrastructure in the state:

- Creation of Industrial Infrastructure Development Fund (IIDF) with a budgetary provision of Rs. 50 crores to finance and subsidize the initiatives in the infrastructure development.
- Establishment of Industrial Infrastructure Development Authority (IIDA) to manage IIDF, collect user charge, raise capital and in due course of 4 years become self sufficient through professional planning and implementation.
- Creation of world class facilities like transshipment centres, integrated transport and trade centres, exhibition halls, trade centres, container depots, way-side facilities, display centres etc. through private partnership.
- Maintenance of the industrial estates by co-operative of the industry owners.

Power and Energy

The following steps were taken regarding the power and energy supply:

- Uninterrupted power supply for 24 hours to the industrial estates.
- An industry with an investment upto 50 crores shall be provided with a separate feeder.
- Any feeder having more than 75% of industrial load shall be considered as an industrial feeder and shall be exempted from the power cuts.
- Any feeder created at the cost of the industries shall not be tapped for any other purpose except if the industry consents for it.

- Natural gas to be promoted as an alternate source of energy.

Fiscal Assistance-Infrastructure Project

The following measures were adopted to deal financial assistance to the industries:

- Industrial estates are eligible for 20 percent of investment or Rs. 250 lakhs, whichever is less.
- Common facilities in industrial clusters, which are recommended by industrial associations, are eligible for 50 percent of investment or Rs. 200 lakhs per cluster, whichever is less.
- Laboratories for quality control and Research and Development for products of small scale industries are eligible for 50 percent of investment or Rs. 100 lakhs, whichever is less.

Stamp Duty & Registration Charges on Land

The state government has provided 100% stamp duty exemption on a number of industrial projects some of them are as follows:

- New small scale units in 24 districts of Poorvanchal and 7 districts of Bundelkhand;
- Infrastructure projects.
- IT/BT, and food processing units and call centres.
- Service sector projects.
- Facility of registration of all industrial projects at concessional rate of Rs. 2 per thousand, subject to a maximum of Rs. 5,000.

Fiscal Incentives to Existing Units

The following fiscal incentives have been given to the existing industrial units:

- Stamp duties on business transactions to be rationalized to Rs. 2 per thousand.
- Rates of interest on arrears of declared trade tax and assessed trade tax to be reduced to 14 percent and 12 percent respectively from existing 24 percent and 18 percent respectively;
- Reimbursement of 50 percent expenditure incurred on registration of patents and other intellectual property rights, subject to a maximum of Rs. 5.0 lakhs.
- Interest rates of State Financial Institutions to be brought at par with bank/market rates.
- Reimbursement to small scale units of expenditure incurred on-

- Obtaining quality certification, 50 per cent of expenditure subject to a maximum of Rs. 2.0 lakhs.
- Market and technical studies and study of production skills, 90 per cent of expenditure subject to a maximum of Rs. 50,000.
- Incentives to existing small scale units under U. P. Small Industries Technical Upgradation Scheme-
 - 50 per cent subsidy, subject to a maximum of Rs. 2.5 lakhs for purchase/import of technical know-how from government recognized institutions.
 - 50 percent capital subsidy, subject to a maximum of Rs. 2.00 lakhs for purchase of additional machinery for increasing production.
 - 5 percent interest subsidy for five years, subject to a maximum of Rs. 50,000 per annum, on loans from banks/financial institutions for purchase of machinery.

2.10 INSTITUTIONS AND SCHEMES

The prominent institutions working for the promotion and development of the small scale industries are as follows:

1. Small industries development organization.
2. Integrated infrastructure development centre.
3. National small industries corporation limited.
4. The Directorate of Industries.
5. State Small Scale Industries Board.
6. State Financial.

2.10.1: SMALL INDUSTRIES DEVELOPMENT ORGANISATION

The Small Industries Development Organisation (SIDO), under the Ministry of Small Scale Industries, is the nodal agency for assisting SSIs through technology, marketing, infrastructure and training support. It works with the Reserve Bank of India (RBI), Small Industries Development Bank of India (SIDBI) and commercial banks in making credit available to SSI units.

2.10.2: INTEGRATED INFRASTRUCTURE DEVELOPMENT CENTRES

The IIDC Scheme aims at augmenting the infrastructural facilities in rural and backward areas to promote industrial development. This scheme has been revamped in the Ninth Plan by removing certain restrictive provisions and by providing liberal finance to the northeastern region, including Sikkim, and Jammu and Kashmir. So far, 58 IIDCs have been approved and Central grant of Rs. 38.83 crore has been released up to February 2001. An additional 50 centres are proposed to be taken up during the Tenth Plan period.

2.10.3: NATIONAL SMALL INDUSTRIES CORPORATION LIMITED

The National Small Industries Corporation (NSIC) Ltd. was established in 1955 to promote and foster the growth of small industries. The Corporation provides machinery on hire purchase, equipment on lease, raw material assistance, marketing inputs for domestic and exports, single point registration, technical and managerial assistance, etc. The NSIC is also helping SSI units in marketing, enterprise building, and training to promote viable small industries all over the country, particularly in backward areas and in selected lines of production identified as priority areas for exports.

2.10.4: THE DIRECTORATE OF INDUSTRIES

The directorate of industries is responsible for promoting industries at the state level. It carries out the development of small industries, their financial assistance, establishment of the industrial estates, provision of infrastructural facilities and the development of industrial co-operatives.

2.10.5: STATE SMALL SCALE INDUSTRIES BOARD

Small scale industries board exists both at the national and the state level. The state level board comprises of representatives from the central government and the state government departments, state financial corporations and the associations of small-scale industries of the concerned states. The function of the state small scale industries board is to advise the respective state governments on the measures to be taken to foster small scale industries.

2.10.6: STATE FINANCIAL CORPORATIONS

Financial corporations are there in all the states for providing medium and long term credits to industries, including small scale industries. The loan is given from their own funds and from the funds given by the state government for this purpose. The interest rate charged by the SFC's is comparatively lower than the other financing institutions. They are established and functional in almost all the states.

2.10.7: OTHER SCHEMES

The Ministry of SSI implemented other schemes like international cooperation, surveys, studies and policy research, Trade Related Entrepreneurship Assistance and Development for Women (TREAD); National Entrepreneurship Development Board (NEDB); and Micro Finance Programmed. The Ministry provided financial assistance to SSI entrepreneurs for participation in overseas fairs to enable them to source technology and access export markets. The Ministry had entrusted a number of studies and surveys to various research, academic and training institutions.

2.11: THE BANARASI SARI COTTAGE INDUSTRY AT VARANASI

Banarasi saris are manufactured in the most ancient and sacred city of Varanasi. Thousands of weavers are engaged in weaving Banarasi saris.

2.11.1: HISTORY OF MANUFACTURE OF BANARASI SARI

Weaving Banarasi saris is a functional art of India, which has been going on for centuries within a great fabric of Indian traditional weavers. The banarasi saris gained popularity during the Mughal era. During this period, all art was amalgamated to create a fusion of aesthetics. Persian motifs and Indian designs on silk studded with gold and silver remained the cue of Mughal patronage. During Mughal era the raw material i.e. silk used to come from China.



Fig.2.1 The Ghats of Varanasi



Fig.2.2 Busy market place at Varanasi

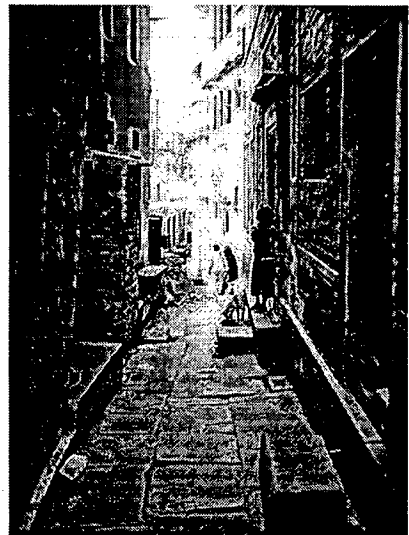


Fig.2.3 Densely populated areas and narrow lanes of Varanasi

2.11.2: PRESENT STATUS

Today Banarasi sarees are being exported worldwide. There are mainly four varieties of Banarasi saree available today. They are pure silk (katan); organza (kora) with zari and silk; georgette, and shattir.

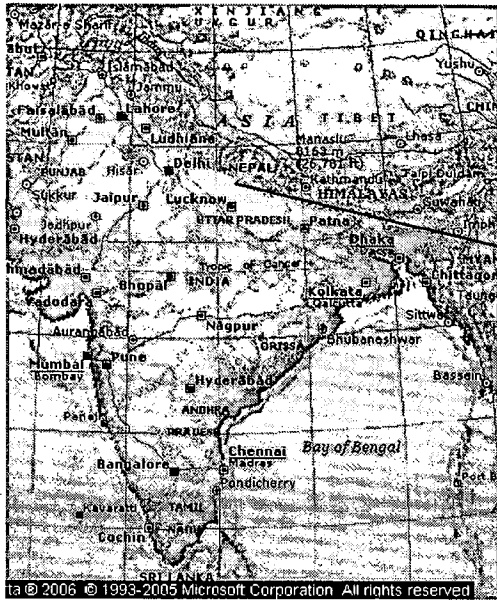


Fig.2.4 Map of India: State wise

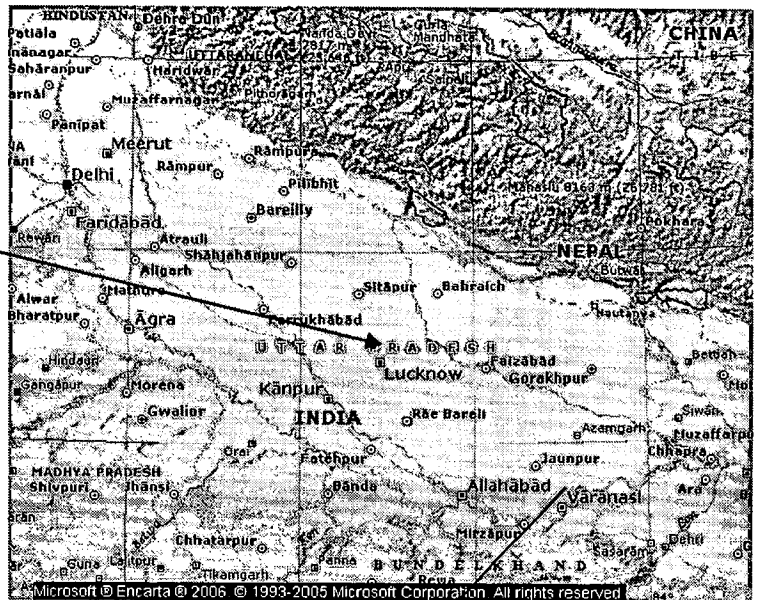


Fig.2.5 Map of Uttar Pradesh

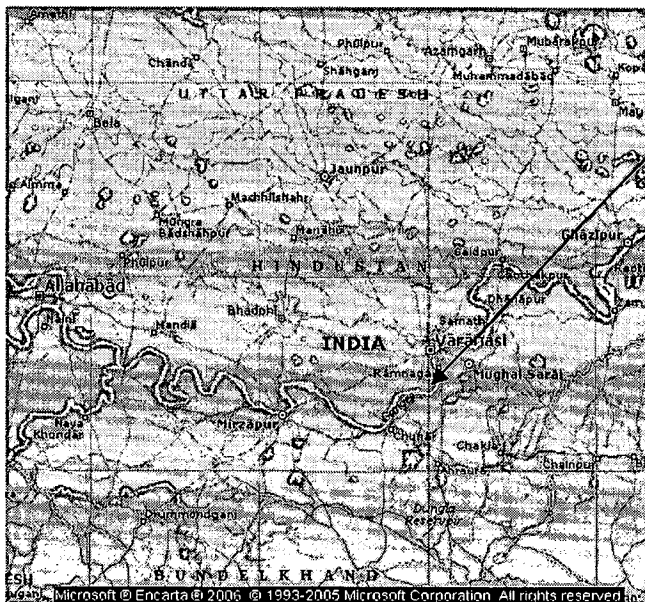


Fig.2.6 Location map of Varanasi with respect to neighbouring districts

Around 10,000 retail outlets sell Banarasi sari in Varanasi itself which is more of a cottage industry for several million people around Varanasi which includes Gorakhpur and Azamgarh as well. Around 60 percent of artisans are Muslim for whom weaving this art is their tradition.

2.11.3: THE PROBLEMS OF THE INDUSTRY

The industry depends upon skilled weavers, who for generations made a good living out of weaving. Weavers in the Banarasi sari industry are known for their skills of weaving intricate designs, which often take days and months to finish.

After the introduction of the powerlooms the handloom weavers were thrown out of business. To catch up, the weavers tried to form unions and co-operatives. These attempts were successful in some states like Kerala, where the government supported its local weaving industry with special packages. However in places like Uttar Pradesh, the state government neglected the industry to such an extent that the industry is now dead.

Huge import of cheap materials from countries like China has broken the backbone of the entire handloom industry in India. The result is acute starvation and hunger in the weavers' families. People are faced with lack of market for their product and resultant unemployment and poverty. The problems can be summarized as follows:

1. Large scale import/ dumping of Chinese copies of Banarasi sarees and fabric lengths at rock bottom prices.
2. Large scale copying and sales of Banarasi look-alike sarees and fabric lengths in polyester yarn made by mills in Surat.
3. Shrinking market for high quality Banaras brocades as zardozi embroidered saris have been promoted by designers.

2.11.4: EXTENT OF THE PROBLEM

The following are some of the points that clearly define the extent of the problems faced by the weaver's community in Varanasi:

1. Only half of the one lakh strong weaver's community has work. The rest are unemployed.
2. The average family income of those employed is now down to approximately Rs.2,500/pm.
3. Others involved in secondary/associated occupations like the dyers and warpers are in a similar, if not worse, plight.
4. Reports of weavers committing suicide (BBC News Night – Paul Mason report)
5. Reports of weavers selling their blood to make ends meet. (NDTV report by Shikha Trivedi)
6. The flip side of the coin is that while on the one hand China is dumping copies of Banarasi weaves - India is importing much needed, silk yarn from them. The weavers are largely dependent on this yarn for their weaving needs and cannot survive without this import.

Keeping these problems in view a discussion was held between the public, experts and the local traders on 14th march, 2006 and an action plan was formulated. This plan included a package of humanitarian as well as technical assistance. The technical part of the action plan is as follows:

Table 2.1: Demographic Statistics of Varanasi District

S. No.	Data	Quantity
1.	Varanasi District Total Population	4,860,582 persons
2.	Total Land Area	5,092 sq km
3.	Urban Population	27.2%
4.	Rural Population	72.8%
5.	Varanasi Urban Population ('91)	1,057,972
6.	Male	53.7%
7.	Female	46.3%
8.	Total Varanasi Urban Land Area	104.82 sq km

9.	Varanasi City Proper	83.05 sq km
10.	Population density (city proper)	11,227 persons / sq km
11.	Number of residential dwellings	129,536
12.	Number of households	140,600
13.	Average household size	7.52
14.	Literacy rate	51.4%
15.	Hindu	69.7%
16.	Muslim	29.5%
17.	Sikh	0.3%
18.	Christian	0.2%
19.	Jain	0.1%
20.	Buddhist	0.03%
21.	Other	0.02%

Table 2.2 Employment Statistics of Varanasi District

S. No.	Data	Quantity
1.	Not employed	73.07%
2.	Total Employed	26.44%
3.	Manufacturing	10.64%
4.	Trade & Commerce	6.77%
5.	Other Services	4.99%
6.	Transport & Communications	2.00%
7.	Agricultural	1.01%

8.	Construction	0.58%
9.	Marginal Workers	49%

Source: Census of India

2.11.5: PROMOTION/ MARKETING/ PUBLIC EDUCATION

The following points had been covered in the discussion related to the promotion, marketing and public education:

- Leverage alternative instruments that can enable or supplement unique identity, branding and collective market promotion, consumer awareness and distinct characteristics of authentic Banarasi brocades.
- Check on the wearing of Banarasi sarees in films and use this as a publicity peg.
- Revitalize raw material procurement and their sources under controlled structure to leverage distinctive identity
- Revive techniques of natural dyes, eco-friendly processes and other similar aspects of value as practice to create high-end niche markets.
- Synergize the supply and value chain to induce organized structure and sense of pride rooted in quality norms associated with best practices of their historical reputation.
- Need for consumer education on benchmarks of quality and linking handmade quality to self-esteem and national pride.
- Put in internal checks and balances among all the stakeholders to implement prescribed norms as stated or claimed for the authenticity of the craft in the definition of Traditional Knowledge.

2.11.6: TRADE PROMOTION

The following points were agreed upon for the promotion of trade of the weaver community:

- Educate and work in collaboration with retail and wholesale traders.

- Build a dialogue between stores and artisans.
- Activate Traders and stores in large metro towns and inform them of the situation. Appeal to their 'civic' duty.
- Develop contact with the large silk exporters – find out their views, study their solutions.
- Activate the Fashion Design Council and other such bodies.

2.11.7: PRODUCT, DESIGN AND MARKET DIVERSIFICATION AND DEVELOPMENT: HOME AND EXPORT MARKETS

Better design was considered inevitable to establish brand and diversification in the market. The following are the recommendations for better product supply in the market:

- Need to create brand identification (which GI would do most effectively).
- Involve Design Institutes and encourage young designers to work in conjunction with traditional makers.
- As the demand for saris has reduced, weavers who can only weave saris need design help on product diversification for their survival.
- The textiles (Varanasi weavers only weave sarees) in their present form have limited use. In a sari the fabric is not evenly woven, denser along the border and at the pallu. The weavers need help so they may apply their technique to making uniform fabrics which can have diverse uses from home furnishing to other forms of dress.
- (a) strategic approach would be to make a positive use of the Global Market by exporting high quality crafts to China, targeted at a growing middle class with great purchasing power and eager to buy what is rare and different! In this connection, the use of the UNESCO SEAL of Excellence can be helpful as a certification of authenticity and quality.

2.11.8: CAPACITY BUILDING FOR ARTISANS FOR THE WEAVER

The following are the measures adopted in the discussion for the capacity building of the local artisans:

- Marketing support and market information is of critical importance to weavers.

- Quality control parameters information.
- The weavers need assistance to gauge national and international demands and trends.
- Access to market research.
- Access to information on international sizes and colour trends based on feedback from large international buying houses based in India. Ex. Best Seller, Marks and Spencers, etc.
- Access to design inputs for product diversification.

2.11.9: EDUCATION.

The Indian Institute of Handloom Technology offers a three year diploma course that covers Fabric Structure, weaving theory, Textile design and colour, General textile technology, Textile Testing, Textile Printing, Textile chemistry, classification of Dye Stuff chemicals etc. This is the highest level of program on textiles available. This is an important course for the weaver's children as 20% seats are reserved for them. These graduates are at the moment being absorbed in export houses, silk boards etc.

The proposals for the improvement of the education facility are as follows:

- This needs to be upgraded as a degree program.
- The number of reserved seats needs to be increased to 50%
- More institutes with degree courses on weaving need to be set up in other parts of the country.
- Weavers and their children need to get reserved seats.
- The program needs to be supplemented by adding new subjects to the curriculum.

2.11.10: TECHNOLOGY UPGRADATION

Looms

The following measures of have been adopted for the improvement of the looms at Banarasi saree industry:

- A scheme to finance upgradation of looms is necessary

- Availability of loans
- Standardisation

2.11.11: RAW MATERIAL ISSUES

Silk Yarn

- Non availability of Indian yarn
- Short supply of imported Chinese yarn
- Poor quality of Chinese yarn imported
- High price of Chinese yarn
- High prices of Indian Silk yarn

Action Required

- The issue of high prices of Chinese silk yarn may perhaps have been resolved as in the Finance Ministers current budget speech the duty on silk yarn imports has been slashed to 5%
- Indian sericulture farming needs to improve in the long term.
- Stringent control/tests on the quality of yarn being imported

2.11.12: STRENGTHENING DATABASE

As there is an absence of a strong database in this sector there is an urgent need to strengthen this for all craft and endangered crafts most particularly.

- Collect statistics on number of weavers in the cluster, and decline in employment over the past decade.
- Hold public meetings with weavers to record their testimonies on problems faced by them.
- Ascertain, through desk research and conversations with weavers, the causes for the decline of the handloom weaving cluster.
- Review correctional measures taken by the government, if any.

- Recommend potential interventions to increase market-led growth for the Varanasi Handloom cluster.
- AIACA has funds for a fact finding exercise comprising of weavers and economists to create a record of the problems being faced by the cluster.

2.11.13: CONCLUSION

The study of the discussion shall help during the field surveys and discussion with experts. The discussion covered a variety of aspects of the handloom industry. The presence of experts in the discussion could give technical suggestion. The traders and weavers in the discussion helped in giving the ground realities and pointing out the problems in implementing the proposals. People could help by their moral support and also some good suggestions. Overall it was a comprehensive and fruitful discussion and it helped a lot in understanding the intricacies of small scale industries in India.

CHAPTER 3: CASE STUDIES

CASE STUDY 1: DINDIGUL

DIAGNOSTIC STUDY: LOCK INDUSTRIES CLUSTER DINDIGUL

The study was conducted by Mr. M Ramalingam, Assistant Engineer (Industries), District Industrial Centre, Madurai, Tamil Nadu. It was developed under the Cluster Development Agent Training Programmed, organized by UNIDO CDP, New Delhi and the Entrepreneurship Development Institute of India, Ahmedabad in the year 2001.

3.1: OBJECTIVES OF THE STUDY

The objectives of the study were as follows:

1. To identify the factors influencing the functioning of the lock industry in Dindigul.
2. To identify the problems faced by the lock industry that is leading to its downfall.
3. To chalk out an action plan necessary for the revival of the lock industry in the Dindigul district.

3.2: SCOPE OF THE STUDY

The study covers the lock industry functioning in the Dindigul district. The various factors responsible for the development of the lock industry in the area are covered and an action plan is chalked out for the revival of lock industry in the area.

3.3: METHODOLOGY

The methodology used for the study is as follows:

3.3.1: DATA

The data for the study has been collected from the secondary sources which include the various government institutions and agencies working at Dindigul and the census of India.

3.4: REASONS FOR THE SELECTION OF THE CASE STUDY

The following are the reasons for selecting lock cluster at Dindigul as a case study:

1. Dindigul is the only place in India where lock industry exists as a small scale and traditional industry besides Aligarh.
2. Dindigul is also known for its locks like Aligarh
3. The artisans and craftsmen at Dindigul working in the lock industry have the same problems as those of Aligarh.
4. Dindigul has advantage over Aligarh in terms of better infrastructure and organization of the lock manufacturers.
5. It lacks behind Aligarh in terms of the scale of production.
6. Dindigul locks have traditional been fighting the competition against Aligarh locks in the national market.

3.5: STUDY AREA PROFILE: DINDIGUL DISTRICT

3.5.1: LOCATION

Dindigul district was carved out of the composite Madurai District on 15.9.1985. Dindigul district is located between 10 05" and 10 9" North Latitude and 77 30" and 78 20" East Longitude. This district is bound by Erode, Coimbatore, Karur and Trichy districts on the North, by Sivaganga and Tiruchi District on the East, by Madurai district on the South and by Theni and Coimbatore Districts and Kerala State on the West. It is spread over on area of 6266.64 Sq. Km. It comprises of 3 Revenue Divisions, 7 Talukas and 14 Panchayat Unions.

3.5.2: GEO-CLIMATIC CHARACTERISTICS

It enjoys semi arid tropical temperate climate with an average range of rainfall ranging from 778.2-mm to 931 mm by virtue of Western Ghats. The major types of soil in the district are red soil, and black soil, seen in the dam and riverbed areas. There are few seasonal rivers like Vaigai, Manjalar, Kodaganar, Shanmuganathi sever these soils.

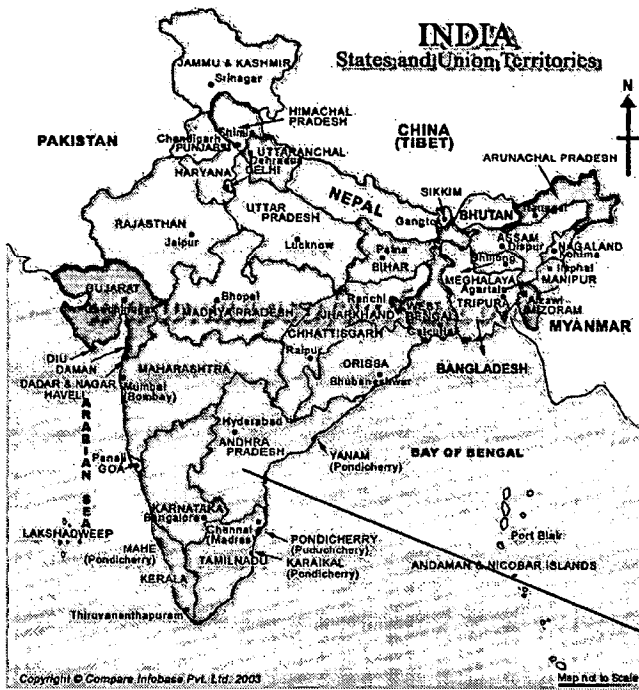


Fig.3.1 Map of India: State wise

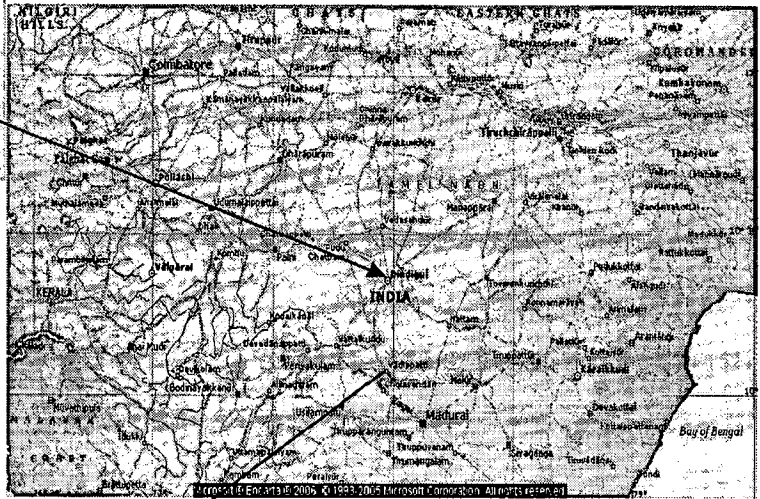


Fig.3.2 Location map of Dindigul with respect to other districts

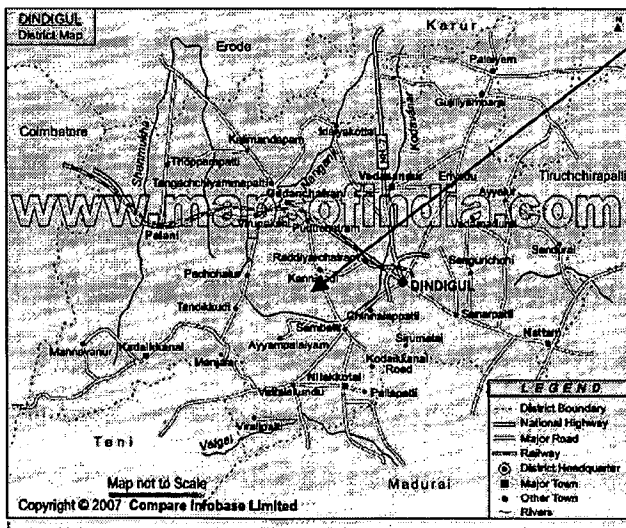


Fig3.3 District map Dindigul

Forest accounts for 22.17 % of the total geographical area of the district. It contributes 6.5% of the total State forest area

3.5.3: HISTORY

Dindigul, which was under the rule of the famous Muslim Monarch, Tipu sultan, has a glorious past. The historical Rock Fort of this district was constructed by the famous Naik King Muthukrishnappa Naicker.

3.5.4: DEMOGRAPHIC CHARACTERISTICS

According to 2001 Census, the population of Dindigul is 19,23,014. The per capita income of this district was Rs.11, 500/- in 1998-99 it is Rs. 1087/- less than the state average per capita income of Rs.12, 287/-. Dindigul district is one of the populous district in Tamil Nadu, it accounts for 3.15% of the State's population. The density of the population of this district is 317 persons per sq.km, as against the State's average of 478 persons per sq.km. It is 161 persons per sq.km, less than the State's average. Literacy rate of the district was 69.83%, which is 3.6% less than the state literacy rate of 73.47% per cent.

3.5.5: EDUCATION

Educationally, Dindigul is a well developed and popular city. It has got many High and Higher Secondary Schools to its credit. This district has the credit of having two Universities, viz, Mother Teresa University for Women at Kodaikanal and Gandhigram Rural Deemed University at Gandhigram. Also a number of Engineering Colleges, Arts & Science Colleges, Polytechnics, ITIs are available through-out the district.

3.5.6: INDUSTRIAL INFRASTRUCTURE

This district has only two industrial estates at Dindigul and Battalagundu with the extent of 50.2 acres, 84 bigger sheds, 20 tiny sheds and 8 developed plots. This is not sufficient to meet further new industrial development of the district.

All the towns and villages in the district have been connected with power. The total power consumption of 4,32,131 services in the district was 919.157 million units during the year 2000-2001.

The surfaced transport system alone serves as a principal source of transport in this district. 117 km of meter gauge and 95 km of broad gauge railway are helping transportation of passengers and goods and it serves as a vehicle for rapid industrial development in this district.

The district is well served by Canara bank as a lead bank. The total number of branches in the district was 176 during the year 2000-2001.

3.5.7: INDUSTRIES IN THE DISTRICT

The total number of SSI units was accounted 11,029 in the district as on March 2001. The SSI sector has registered a growth rate of 333% in 2000 over 1991.

The existing industrial scenario of this district is dominated by few traditional industrial categories like, Hosiery & readymade garments 33.3%, servicing industries 16.5%, Food and food products 13.3%, leather and leather products 5.6%, metal and machinery parts 5.6% each and rest of the categories are below 5%. However, packaging, electrical, coir, and electronics have made a smart entry in the industrial map of Dindigul district.

As far as the concentration of SSI and large-scale industries are concerned, the development is only in and around Dindigul, Palani, Vedsandur and Attoor talukas in the district. The cottage industries are accounted 6,264 units in this district, which are generating employment opportunities to 12,680 persons in the rural area of the district.

The lock industry has a good potential for developments in the district. However, modernization is essential, as the locks are not able to compete with Aligarh lock units at present. Another industry for which Dindigul is noted is Leather Tanning.

3.5.8: FINDINGS

3.5.8.1: STATUS OF THE LOCK INDUSTRY

The lock industry in Dindigul is more than a 100 years old and is spread over 5 villages in the district. Earlier the number of units in each village was approximately around 50 but now only a total of 43 units exist in the entire cluster. In some of these units, there is only one or two persons engaged in making of traditional locks. The present annual turnover of the cluster was estimated to be around Rs.120 lakhs.

Hand-made locks have an international reputation and some of the products are valued at even Rs.1000 per lock. All the locks made in this cluster are hand-made and each lock is unique in its design and system. However, these locks do not conform to the ISI certification standards. There is no documentation of the method of manufacturing and even the drawings of the locks do not exist. The entire process is based on the craftsmen's memory. Most of them have been engaged in this business for many years. As a consequence of absence of technical information, one cannot capture the skill base of this craft.

So when the concerned manufacturer retires, his knowledge also goes along with him. In olden days, these skills used to get transferred to the new generation as the craftsmen's children too would involve themselves in the lock-making occupation. But now due to less remuneration in smith-work, an increasing number of youngsters are opting for the textile industries and are leaving their traditional businesses. Introduction of new types and designs of locks in the cluster is a dire need of today. This would require formal training in new manufacturing methodologies so that the Dindigul Lock Cluster may be able to survive the onslaught of imported locks.

3.5.8.2: MAIN ACTORS IN THE CLUSTER

The production of lock in the area involves many people and supporting industrial units. The following are the main actors in the Dindigul lock cluster.

1. The artisans

2. The assembling SME's
3. Moulding/welding SME's

THE ARTISANS

On an average, a village artisan can produce 3 to 4 locks per day and receive a salary of about Rs.35 to 60, which varies according to the size of the lock that is being manufactured. These artisans are engaged in different processes such as moulding, welding, assembling etc.

THE ASSEMBLING SME'S

There are 42 lock assembling SME's within Dindigul, which are spread over five villages. These SME's manufacture locks by manual operations only. The complete processes of assembling i.e. key coding, finishing, etc are done manually itself. The total number of workers engaged in these assembling units is estimated around 210.

MOULDING/WELDING SME'S

There are 10 units involved in moulding and welding operations in the cluster. These units are located within the Dindigul municipality limit. The total number of workers engaged in these units is estimated around 40.

3.5.8.3: RAW MATERIALS

The major raw materials used are MS flat plates and Brass Plates. These materials are procured from the nearby towns of Madurai, Salem etc. They are usually picked up by the moulding units of the cluster and are converted into lock components before supplying them to the village artisans.

3.5.8.4: PRODUCT DETAILS

MANGO LOCKS:

These types of locks are available in various sizes ranging from 10mm to 25 mm and in various materials like brass, steel, chromium plated, galvanised etc. The different types of

locking systems made are; Double L Triple Locking, Master locking, Lock and Trick locking with interchangeable keys etc. These locks have a vertically sliding shackle with chromium plating to avoid rusting. They usually have 7 lever systems with flat keys.

TRICK LOCK:

Trick locks are usually available in 50mm to 70mm sizes, and have levers made of pure brass and iron shackles. They are called trick locks because they have a special type of pad lock with moveable hold plate and tricky arrangements that can be operated only by a known person.

EXCISE LOCK:

It is a marvelous high security lock with triple arrangements to avoid outer sealing. The inbuilt arrangement provides high security and can be made only by experienced craftsmen. These locks have a double locking mechanism with caution and warning seal-breaking mechanism.

EXPORT LOCKS

Export Locks are wonderfully designed for ease and comfort coupled with high security mechanism. They are available in antique style and finish and attractive designs. Door locks in pure brass and in mild steel are available with ordinary models to high tech, trick and bell security systems.

ALMIRAH LOCKS

Almirah locks are available in pure brass from 50mm to 75mm.

SPECIAL FEATURES OF THE PRODUCTS

The craftsmen claim that the precision lever mechanism of their locks is unpickable. The shackles are meticulous in design and offer greater resistance to anyone who tries to break in.

3.5.9: DINDIGUL LOCK CLUSTER

The levers are so designed that they have a greater degree of non-interchangeability of keys. There's a combination of proper key-holes to suit male, female, round or flat type of keys. A few locks are designed with unique and remarkable synthesis of traditional design and compatibility with foreign keys. The motto of the lock making units in the cluster is: "Our Customers are Trustful and Thieves are Fearful"

3.5.10: INSTITUTIONS OPERATING IN DINDIGUL LOCK CLUSTER

3.5.10.1: THE DINDIGUL LOCK WORKERS INDUSTRIAL CO-OPERATIVE SOCIETY

The society is a composite lock manufacturing unit and is the only one of its kind in Dindigul. It manufactures the unique Dindigul type of locks such as Pad locks, Door locks, Furniture locks, Railway locks, Temple locks, Excise locks and Special Purpose locks. The society was established in the 1957 for the upliftment of the village artisans under the Department of Industries and Commerce, Government of Tamil Nadu. It was awarded an order worth Rs20 lakhs, which covered almost 90% of the security locks required in the Government departments and other public sector undertakings of Tamil Nadu. The society has a strong infrastructural setup.

3.5.10.2: THE DINDIGUL SMALL AND TINY INDUSTRIES ASSOCIATION

The association was started for the welfare of small and tiny units in the Dindigul district. Two years ago, the association conducted a skill up gradation training programme for lock workers in collaboration with the National Small Industries Corporation (NSIC). But the benefits of the same were not well availed of properly by the village artisans. Most of the village artisans and assembling units are not registered with the association as members.

3.5.10.3: DISTRICT INDUSTRIES CENTRE (DINDIGUL)

The DIC is responsible for the following functions:

- a) Issuance of permanent SSI certificate to the industries in the cluster SME's.

b) Implementation of the Government sponsored schemes like subsidies of Khadi and Village

Industries Commission (KVIC), Margin Money Assistance Scheme and Prime Minister's Rojgar

Yojana Scheme (PMRY) etc.

c) It acts as a nodal agency for the Development of the Dindigul Lock Cluster

3.5.10.4: INSTITUTE OF TOOL ENGINEERING (DINDIGUL)

The institute conducts a vocational course awarding a Diploma in Tool Engineering Technology, which has a course-duration of 3 years. This course helps in providing skilled entrepreneurs to the lock industry.

3.5.10.5: OTHER INSTITUTIONS

UNIDO INTERNATIONAL CENTER FOR ADVANCEMENT OF MANUFACTURING TECHNOLOGY (ICAMT), BANGALORE

The UNIDO-ICAMT has implemented a national programme for the development of the Indian lock industries. An agreement to this effect was made on 21.09.2001 at UNIDO head quarters in Vienna between the Development Commissioner of Small Scale Industries, Government of India and UNIDO. The programme's objective is to strengthen the competitiveness of the lock industry and thereby increase its market share in the world. This will be done through enhancing the manufacturing capacities and, strengthening the technological and market development capabilities of the SMEs involved in lock making. The planned duration of this project is 2 years and the project cost is Rs.5.7 crores. The partners for the project are:

- Development Commissioner Small Scale Industries (DC-SSI)
- Department of Industrial Policy and Promotion, Government of India
- The State Governments of Uttar Pradesh and Tamil Nadu
- The Lock Industries Associations like the All India Lock Manufacturers Association and Aligarh
- Lock Traders and Manufacturing Association.

- The Dindigul Lock worker's Industrial Co-operative Society
- The Central Manufacturing Technology Institute (CMTI), Bangalore.
- Banks like SIDBI, Canara Bank and State Bank of India.
- ICAMT has also identified a need for training of the Dindigul Artisans to impart new skills and generate awareness on new technologies in lock smithy.

3.5.11: SWOT ANALYSIS

STRENGTHS

- Complete manual assembling with each lock having its own unique key code.
- Easily availability of skilled labour.
- The Dindigul Lock Worker's Industrial Co-operative Society Ltd. is a strong actor and a nodal agency to promote infrastructural development & skill upgradation amongst craftsmen of the cluster.

WEAKNESSES

- Poor market linkages.
- Absence of commonality of goal.
- Using low level technology.
- Lack of product branding.

OPPORTUNITIES

- Sub contraction job from large units.
- Big scope in manufacturing of special purpose locks.
- Huge Untapped markets potential.

THREATS

- Entry of multinational in domestic market e.g. (China Locks)
- There is no separate R&D institution for introducing new models & types.

3.5.12: RECOMMENDATIONS: VISION FOR THE CLUSTER

"The Dindigul lock cluster will provide high quality locks to cater to the domestic and export markets by adopting the latest art of technology by 2003".

3.5.12.2: MARKETING EFFORTS

The marketing for Dindigul locks needs a greater thrust. The Dindigul Lock Worker's Industrial Cooperative Society Ltd. is participating in seminars and exhibitions, but there is a need to give more publicity to the Dindigul brand so that a bigger market share is realised. UNIDO -ICAMT sponsored the DICO in the INTEC 2002 Industrial Trade Fair, so that they could attract more customers and publicity. More vigorous marketing strategy was also under consideration to tap on the export potential of Dindigul locks by the various marketing channels and participation in international exhibitions.

3.5.12.3: TECHNOLOGICAL UPGRADATION UNDER CONSIDERATION FOR THE DINDIGUL LOCK SECTOR

- Required Assembly fixtures of padlocks which are fast moving in design and supply.
- Small size CNC milling machine for cast components – design and supply.
- Sheet-metal bending fixture-design and supply.
- Documentation for the existing locks useful for manufacturing through using CAD/CAM hardware and software.
- Standardisation of products and components.
- Improved finishing process and set up.
- Shackle bending machine and fixture – design and supply Training gadgets and materials, CD ROMS etc.
- Computerised system for stores, inventory, sales and accounting.
- Standard work-room facilities.
- Material testing facilities.
- Automatic technology for removing sharp corners from the pressure die cast components.
- Heavy duty milling machine for providing longitudinal grooves on more than one key at a time.

3.6: INFERENCES

The following inferences can be drawn after going through the case study which are as follows:

1. Small scale artisans need support from the government.
2. They need to be organized under a co-operative to survive the stiff competition from the international manufacturers and large scale domestic manufacturers.
3. Technology upgradation is necessary to be able to compete in the open market.
4. Improved marketing helps greatly to sell the products manufactured in the small scale enterprises.
5. Innovation is the key to success in today's open market economy.
6. Provision of better infrastructural facilities by the government is essential for the survival and development of small scale and cottage industries.

CHAPTER 4

CASE STUDY 2: SAHARANPUR

TITLE: IMPACT OF INDUSTRIAL GROWTH ON THE URBAN DEVELOPMENT AND ENVIRONMENT (CASE STUDY: SAHARANPUR)

4.1: OBJECTIVES

The objectives framed by Saurabh Garg for the study of industrial growth on the urban system of Saharanpur city are as follows:

1. To study the industrial growth in Saharanpur city and its impact.
2. Identification of the urban problems resulting from urban development and technological changes in industries.
3. To analyse the Master plan of Saharanpur city with respect to industrial location.
4. To identify the inadequacy of the infrastructure present.
5. Framing of policies for future development and growth.

The objective number 3, 4, and 5 are relevant to the study of cottage industries in Aligarh city.

4.2: SCOPE AND LIMITATION

Assessing the available infrastructure and resources was a part of the study conducted by the author and then he worked for finding optimal location for the industries. This will evidently form an important aspect for the rejuvenation of cottage industries in Aligarh city. Then the limitation of the study defined as leaving out the technical details, social aspects and the economic implications. Technical details shall be left out in the current study as well, but economic aspects and the social aspects shall be an integral part of the study underhand.

4.3: METHODOLOGY

Methodology adopted for the purpose of study included the study of the historical growth of the city and the corresponding growth of the industries, assessment of resources for industries, the impact of the industries on the residential and commercial development of the city, studying the existing policies and framing the guidelines for the future development of the industries and the growth of the city.

Studying the historical development of the city and industries shall form a part of the present study. Moreover, the impact of cottage industries in the heart of the city shall be meticulously analysed.

4.4: REASONS FOR THE SELECTION OF THE CASE STUDY

The case study: impact of industrial development on the urban system and environment (case study: Saharanpur) deals mainly with the impact of industrial growth on the various sub systems of an urban system. The case study deals examines the existing situations in the city, policies adopted by the government for the growth of the industries in the city, its impact on the urban environment and suggests measures to overcome the harmful effects of industrial growth on the urban system and the urban environment. As a part of the various measures adopted in overcoming the harmful effects of the industries on the city a separate site for the industries has been proposed. Proposing a separate site for the industries not only safeguards the city residential and commercial areas from the harmful effects of industries but also help in better development of the industries themselves. So it is a mutually beneficial proposal for both, the city as well as the industries.

The location of cottage industries in the old city area has been an eye sore for the city planners. So shifting of some of the industries from the old city area will ultimately form part of any plan for the rejuvenation of the industries. The present location of the industries is not only causing the decay of the old city area but also hampering the growth of the cottage industries functioning from therein. The present case study will be helpful to form the plans and policy measures for rejuvenation of cottage industries in the Aligarh city.

4.4: STUDY AREA PROFILE: SAHARANPUR CITY

4.5.1: LOCATION

Saharanpur forms the most northerly position of the Doab land which stretches between the holy rivers of the Ganges and the Yamuna, the Shivalik hills rise above it on the northern frontier. Saharanpur district attained the status as Saharanpur division in 1997 of Uttar Pradesh. In the East lies the district of Haridwar which was the part of district Saharanpur before 1989 and in the south lies the district Muzaffarnagar.

The district is in a rectangular shape and it lies between 29 degrees 34 minutes 45 seconds and 30 degrees 21 minutes 30 seconds north latitude and 77 degrees 9 minutes and 78 degrees 14 minutes 45 seconds east longitude. Its total area is 3860 square Kilometers.

4.5.2: HISTORY

The portion of Doab in which Saharanpur is situated was probably one of the first region of upper India occupied by the Aryan colonisers as they spread eastward from the Punjab. The physical features of the district have proved that Saharanpur region was fit for human habitation. Traces of Indus Valley Civilization and even earlier are available and now it can be definitely established that this region is connected with Indus valley civilization. Ambakheri, Bargaon, Naseerpur and Hulas were the centres of Harappa culture because many things similar to Harappan civilization were found in these areas.

With the passage of time its name changed rapidly. During the reign of Iltutmish Saharanpur became a part of the Slave Dynasty. Muhammad Tughlaq came to know about the presence of a Sufi saint "Shah Harun Chisti" on the banks of 'Paondhoi' river. He went to see him there and henceforth the place is known as 'Shah-Harunpur' or "Saharanpur" by the name of Saint. Akbar was the first Mughal ruler who established civic administration in Saharanpur and made it 'Saharanpur -Sarkar' under Delhi province and appointed a Governor. At the time of the British Rule District Muzaffarnagar was also a part of district Saharanpur.

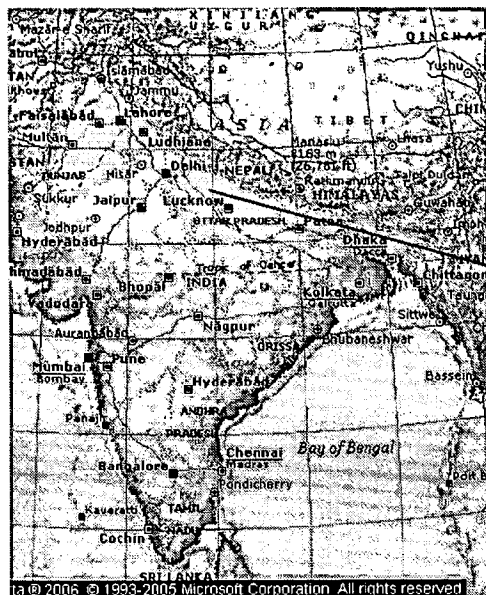


Fig.4.1 Map of India State wise

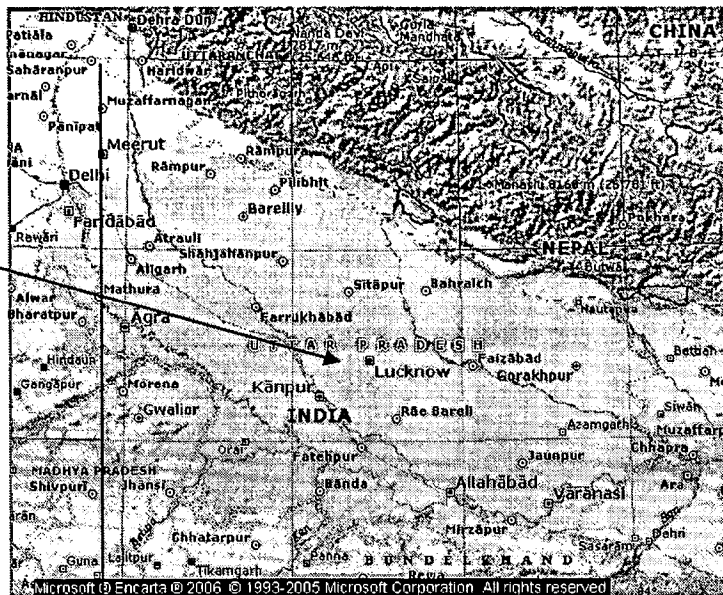


Fig.4.2 Map of Uttar Pradesh

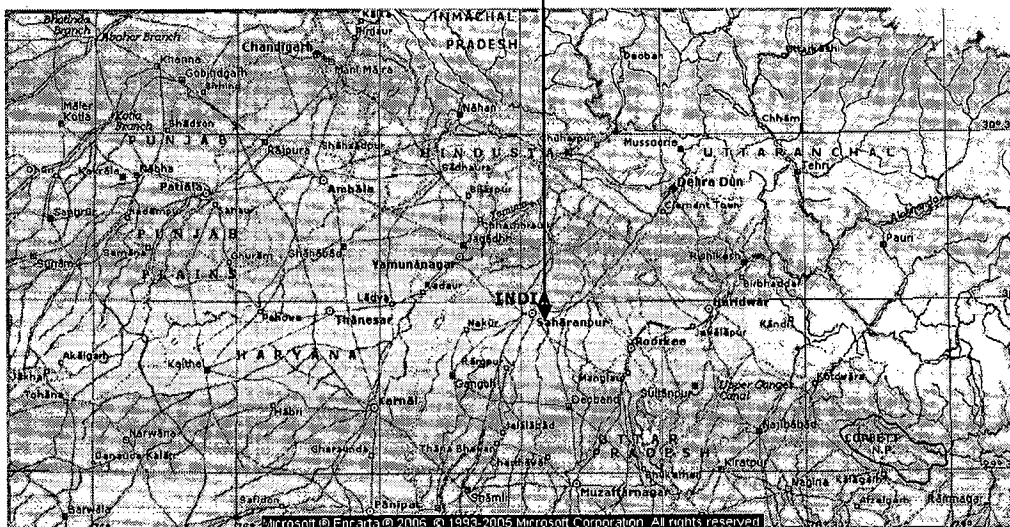


Fig.4.3 Location map of Saharanpur with respect to neighbouring districts

4.5.3: DEMOGRAPHIC CHARACTERISTICS

According to 1991 census the population of Saharanpur is 23,09,029. Male consists of 12, 47, 250 while the female population is 10,61,780. The literacy rate in the district is 64% which is higher than the national average. The male literacy is 67% while the female literacy is 60%.

4.5.4: CLIMATE

The climate of Saharanpur resembles the average climate of Uttar Pradesh in general but its northern position and its proximity to the hills give it its own peculiarity.

The average temperature recorded is 23.3 degree centigrade June being the hottest month while January is the coldest one. The highest percentage of humidity i.e. 72 to 85 % is found during the rainy season at the lower range of humidity between 29 to 51.5 % is recorded in the summers.

4.5.5: MINERAL RESOURCES

Limestone stone boulders are the only main minerals. Limestone is found in the Shivalik hills. Stone, hard enough to be used for building purposes is scarce and is found in Shivalik while stone for road metal is found in the beds of Solani, Hindon and Sukhrao streams. Excellent lime is also procured from the boulders covering the beds of the hilly torrents. The saline efflorescence which is known by the name of Reh, is found in the low lying tracts and in the canal irrigated areas.

4.5.6: INDUSTRIES

Even though Saharanpur district does not have enough mineral resources many agro-based industries have developed in the region. Many cottage industries have also developed. Sugar industry and paper, paperboard industry are found in the district. The large-scale production of sugarcane encourages the sugar industry. Saharanpur is famous for its wood carving industry. The Shivalik range provides the raw material for the industry. Woodwork is exported to countries like Germany, U.K., USA, Canada, Kuwait, Sweden, Singapore and many others.

4.5.7: TRANSPORTATION

The development of transport system depends on the physical features and economic utility of the region. Transport system in the Bhabar region has not developed much due to mountainous rivers and uneven topography. In the Bangar region the roads and railway lines are developed due to favourable conditions like fertile land, high density of population and topography.

4.5.8: TRADE

From the viewpoint of industries and trade the region has great importance. The region produces agro-based and industrial goods, which are sent to the various parts of the country. The trade flourishes and can be divided into three categories:

- a. Food-grains, Vegetables and fruits, Milk and milk products.
- b. Agro-based industries: the most important industries are - sugar, gur, (cotton) textile and cigarettes.
- c. Industrial goods- paper, sugarcane, hosiery material & wood carving.

Besides exporting goods from here the region also imports coal, iron - ore, cement, salt, petroleum products, fertilizers, oil - seeds and leather from Punjab, Haryana, Rajasthan, Delhi and Bihar.

4.6: ANALYSIS

Analysis included the study of the existing infrastructure and amenities such as roads, railways, electricity, water supply, sewerage and drainage, housing, education, health, transport and communication. The economic base of the city was analysed by dividing the population on the basis of occupation. Then the existing industrial pattern of the city was analysed by classifying the industries on various lines. The quality of environment in the city including the quality of air, noise, water and land were analysed. The impact of the industries on the growth of the city was studied by taking into account the impact of the industries on the residential and commercial development, land values, transportation, infrastructure and amenities and the environment.

4.7: FINDINGS

Findings from each of the factors mentioned above were dealt with separately and then combined together to determine the potential of industrial development in the district and the type of industries that were viable in the district. Based on the above findings proposals and recommendations were made for the future development of industries in the city.

4.8: PROPOSALS AND RECOMMENDATIONS

The criteria used for selecting the site for the industries are as follows:

- Favourable wind direction
- Market accessibility
- Accessibility to the sources of raw material
- Accessibility to the services including power, drainage and sewerage, transport linkages, disposal of industrial waste and space for future expansion.

The large scale industries were proposed to be shifted outside the city. Similarly other industries causing less water and air pollution but more noise pollution were also proposed to be located on the Deoband road.

Wood based industries were situated in the densely populated residential areas of the city. The area has narrow lanes and the working condition is unhygienic without proper light and ventilation. Even the structural conditions of the units in these areas are very bad. The supply of raw materials to these areas and the finished goods from these areas is very difficult due to narrow width of the streets.

The raw materials for these industries are brought from Dehradun road and the Chakrata road. So the site selected for these industries is in close proximity to these highways. Moreover the small scale units require market for their finished goods in the close proximity where they could be sold off. The site is only 2.5 km from the market of the finished goods of the industries.

4.9: INFERENCES

The following inferences can be drawn from the above case study of Saharanpur city:

- The case study though not directly related to the development of cottage industries in the heart of a city but it covers the development of small scale industries in the old city area of Saharanpur.

- The study not only finds the location of polluting small scale industries in the old city area with narrow lanes hazardous to the life of residents of the city and a thorn in the development of commercial activities in the city but it also concludes that location of such industries in the city is hampering the growth of the industry itself.
- The analysis of the various sub systems of an urban system and the impact of industries on them is very well carried out.
- The criteria used for the site selection of the industries are satisfactory as the researcher also recognizes the limited time frame as a hindrance from considering more variables.
- The problem now lies in the implementation of the proposals which have not been talked about, since shifting all the small scale industries is neither viable nor feasible.
- Some small scale and cottage industries hardly make enough money to survive. They need huge investment to shift their base of operation.
- If such industries are forced to shift their base, due to financial constraints, they shall have no other option but to close down their shops.
- This will lead to not only wide spread unemployment in the local artisans but may also lead to breaking the backbone of an established industry.
- So a solution, in between the total shifting of the industries, and improving the conditions of the existing industries, has to be found out.
- This case study shall help tremendously in framing of proposals and recommendations for the rejuvenation of cottage industries in Aligarh city.

CHAPTER 5: STUDY AREA PROFILE- ALIGARH CITY

5.1 LOCATION

Aligarh is a city situated 130 kms Southeast of Delhi, 85 kms from Agra and 288 kms from Kanpur in the Western-central region of the State of Uttar Pradesh. It also lies on the Delhi-Howrah rail route. It is situated on the plains between the two rivers, the Yamuna and the Ganges. Its average elevation from the msl is 178 mts. Its summer temperature varies from 30 Deg. C to 43 Deg. C while the winter temperature ranges from 5 Deg. C to 20 Deg. C. It is well connected by road and rail. The nearest airport is the Indira Gandhi International airport at New Delhi.

5.2 HISTORICAL BACKGROUND

Aligarh was earlier known as Koal. It was renamed Aligarh, “Bala-e Qila” meaning a high fort in the year 1776. The fort that lies to the North of the city was originally built in the year 1194. It was reformed later in the modern style in the year 1524-25 during the time of Ibrahim Lodhi. It was captured in the year 1803 by the British, after a long and bloody battle. The fort of Aligarh as it stands today is the work of French and was considered to be one of the strongest forts in India. The Mohammedan Anglo-Oriental College was established in the year 1875, which was declared as the Aligarh Muslim University in the year 1920. Aligarh became the centre of many nationalist movements in the later period.

5.3 PRESENT STATUS

5.3.1 DEMOGRAPHIC CHARACTERISTICS

According to the census 2001 Aligarh has a population of 6, 58, 165 as against 6, 03,706 estimated by the Master Plan 2001. This upsurge in population can be attributed to the increasing importance of Aligarh as a learning and industrial centre.



Fig.5.1 Map of India State Wise

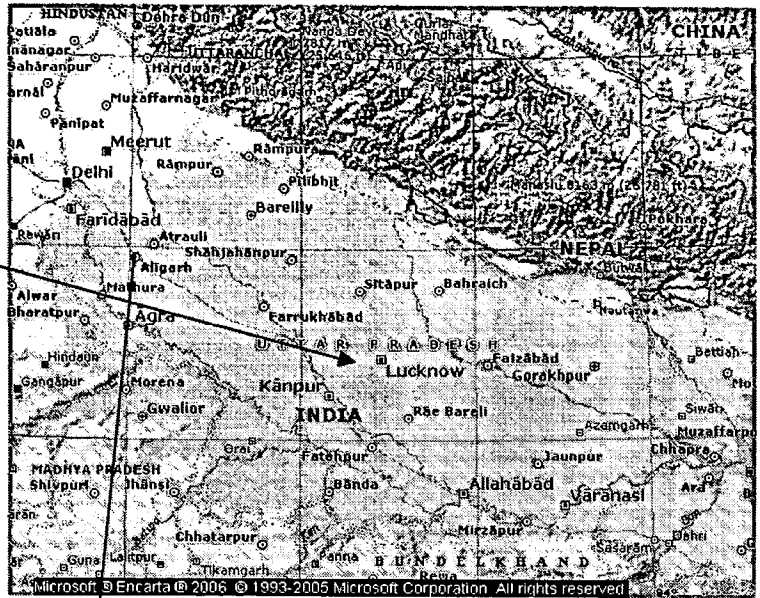


Fig.5.2 Map of Uttar Pradesh

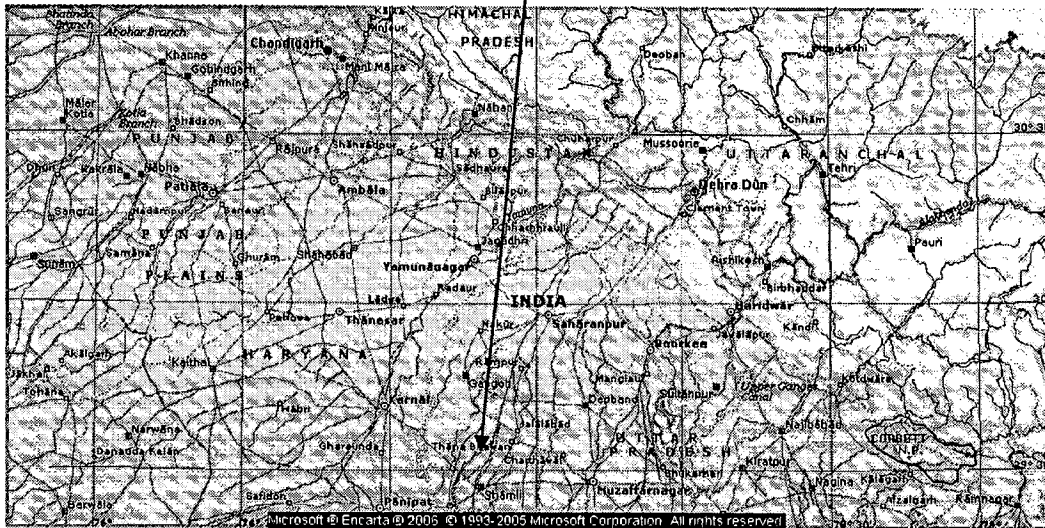


Fig.5.3 Location Map of Aligarh with respect to neighbouring districts



S. NO	SYMBOLS	LAND USE
1.	[Empty box]	AGRICULTURAL LAND
2.	[Empty box]	RESIDENTIAL-INDUSTRIAL
3.	[Empty box]	RESIDENTIAL HIGH DENSITY
4.	[Empty box]	RESIDENTIAL MEDIUM DENSITY
5.	[Empty box]	RESIDENTIAL PROPOSED
6.	[Cross-hatched box]	SMALL SCALE INDUSTRIES
7.	[Dotted box]	HEAVY INDUSTRIES
8.	[Empty box]	UNIVERSITY AND COLLEGES
9.	[Empty box]	COMMERCIAL AREA
10.	[Empty box]	OFFICES
11.	[Empty box]	GREEN
12.	[Empty box]	EXISTING ROADS
13.	[Empty box]	PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE INDUSTRIES IN ALIGARH CITY

SHEET TITLE: MASTER PLAN

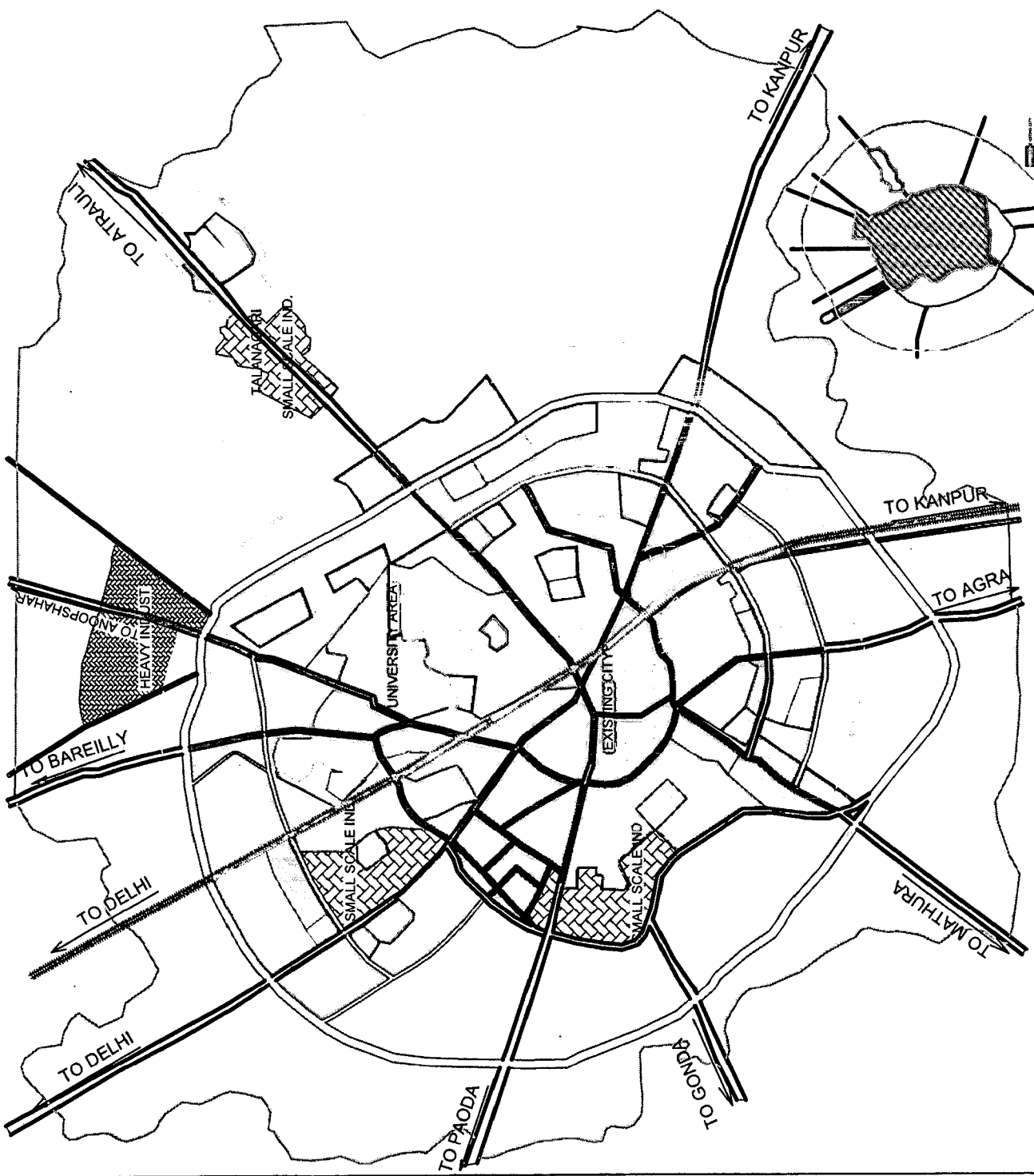
KHAN AMADUR RAHMAN DATE: JUNE 2008

ROLL NO.- 062204 SCALE: 1-50000

MURP II YEAR

DEPARTMENT OF ARCHITECTURE AND PLANNING

IIT ROORKEE, ROORKEE-247667



PLAN:5.1 ALIGARH CITY: MASTER PLAN(1:50000)

DEVELOPMENT AREA BOUNDARY(1:250000)

Table 5.1 Decade wise population growth in Aligarh city

Year	Population	Difference	% growth rate
1951	1,41,668	-	-
1961	1,85,020	43,402	30.64
1971	2,53,314	67,294	36.37
1981	3,20,861	68,547	27.16
1991	4,80,520	1,59,659	49.75

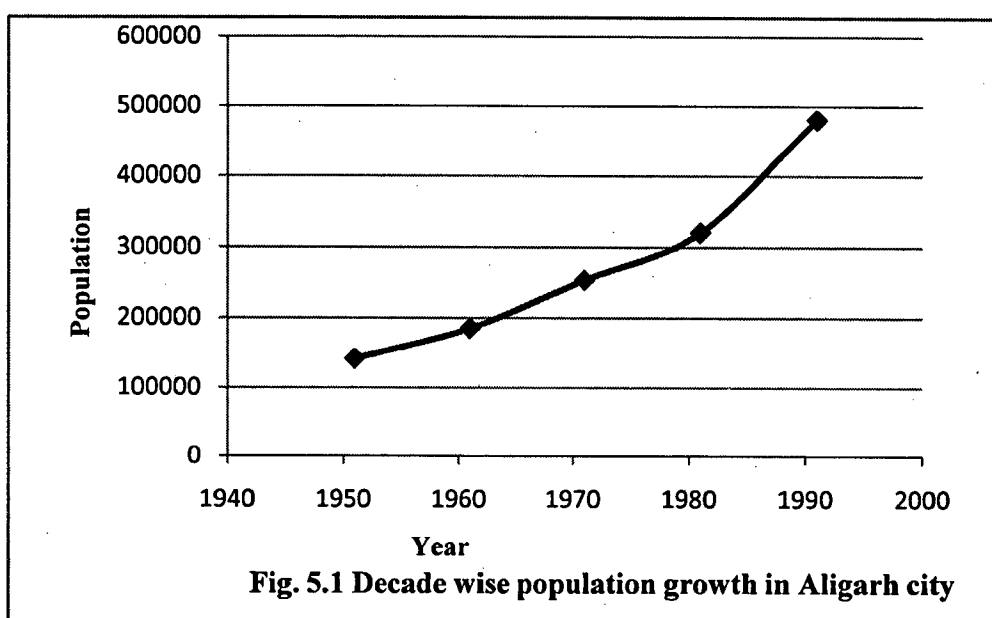
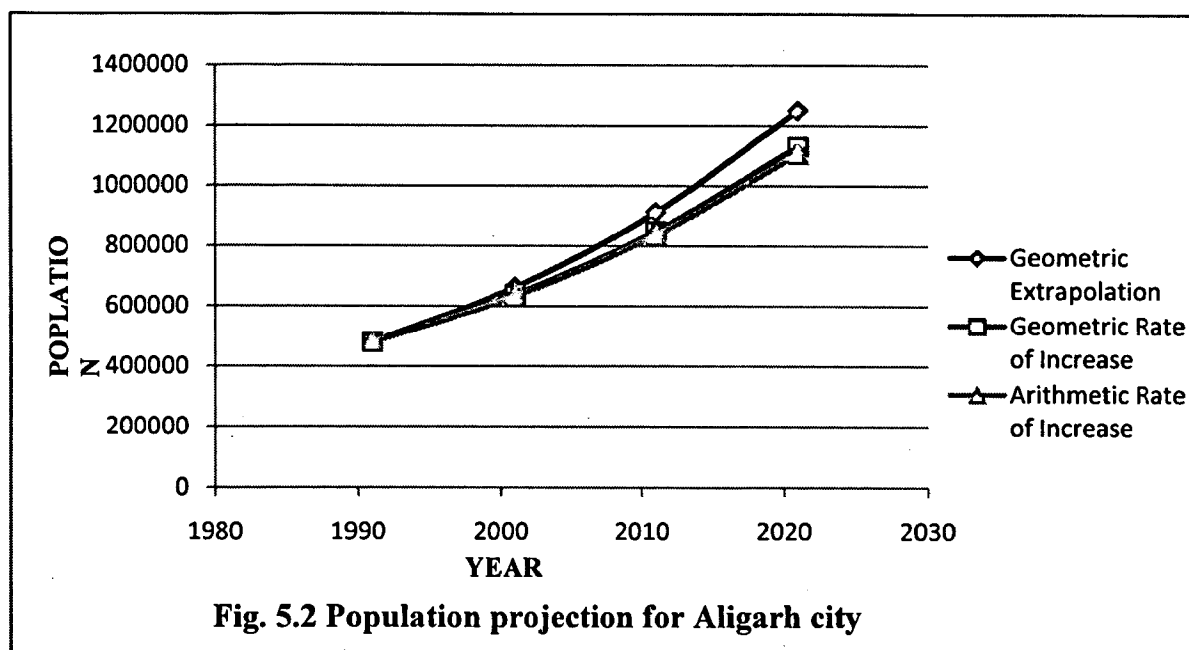


Table 5.2 Population projection for Aligarh city

S. No.	Methods	1991	2001	2011	2021
1.	Geometric Extrapolation	4,80,520	6,63,117	9,12,388	12,49,352
2.	Geometric rate of increase	4,80,520	6,39,091	8,49,991	11,30,489
3.	Arithmetic rate of increase	4,80,520	6,34,286	8,37,257	11,05,179
Total		14,41,560	19,36,494	25,99,636	34,85,020
Average		4,80,520	6,45,498	8,66,545	11,61,673



5.3.4 ECONOMIC PROFILE

Aligarh is an industrial town of Northern India. It is famous for its locks. There are 4-5 large locks manufacturing units, 25-30 medium sized units and 6000 plus small scale units. It is estimated that 80% of the locks in the country are manufactured at Aligarh.

The lock industry is the backbone of city's economy. It is worth for more than Rs. 200 crores and exports worth of Rs. 50 crores. It is cottage based industry with bulk of the work done in small scale units. People usually work at their homes or on rented premises within residential areas of the upper fort.

The industry traces back its origin to the Mughal times. Cottage industries were encouraged by the Mughals. The industry got impetus during the British period as well. The cottage industries are primarily located in the upper fort area. A large number of economically weaker section people have been earning their livelihood through these industries. It employs more than 25000 of the workforce directly and indirectly.

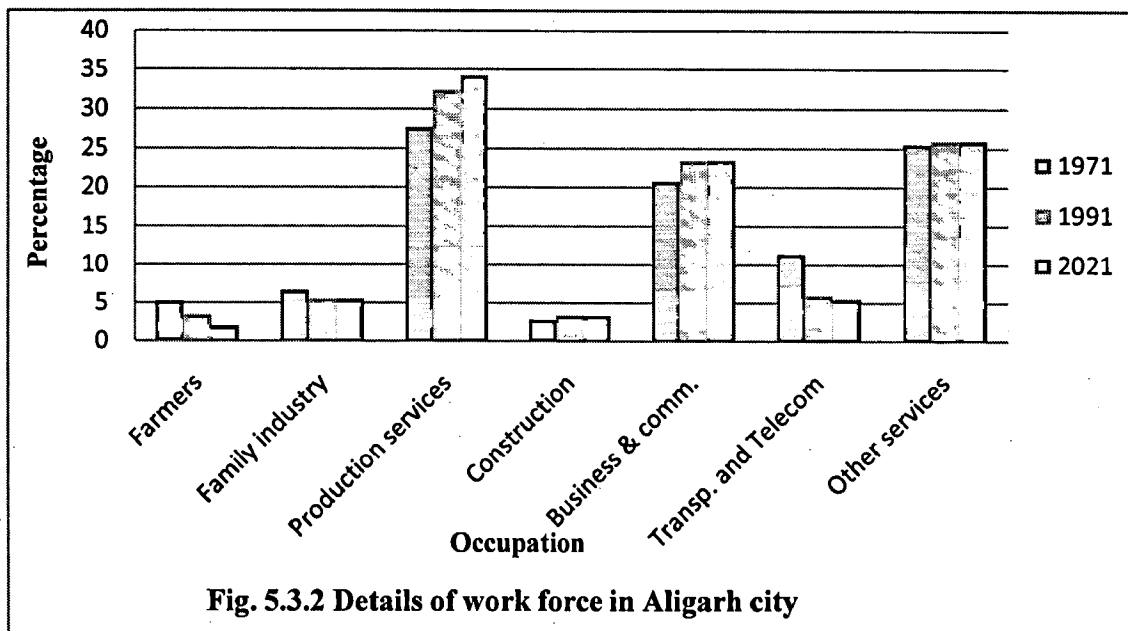
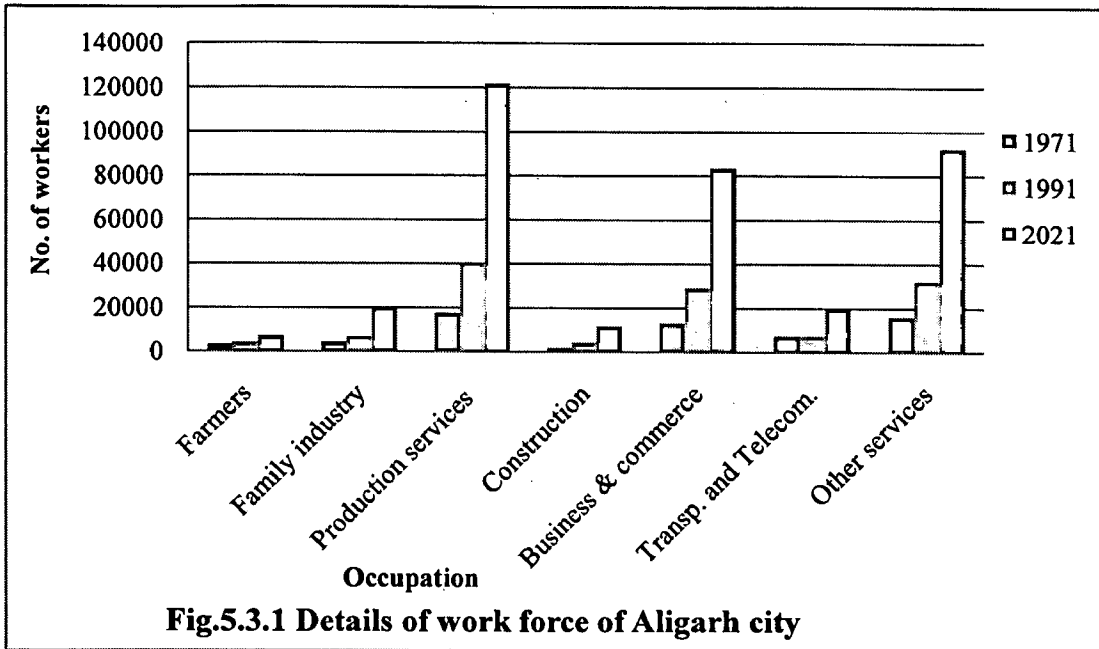
In the last few decades the hardware industry has also emerged in the city. They are engaged in building hardware works such as door handles, latches, door locks, etc., and brass wares and art wares. This industry is worth more than 600 crores and still growing.

Besides these a number of other cottage industries, such as, shaving cream, toothpaste, Ayurvedic and Unani medicines, glass wares, etc., are operating in the city. People are also engaged in construction activity, which is flourishing due to ever increasing demand for housing.

Table 5.3 Details of the work force of Aligarh

Serial no.	Works	1971		1991		2021	
		No. of labours	percent age	No. of labours	percent age	No. of labours	percent age
1	Farmers	3320	5.21	4234	3.40	7104	2.0
2	Family industry	4253	6.68	6883	5.51	19536	5.5
3	Production services other than family industry	17615	27.65	40449	32.38	121778	34.2
4	Construction	1790	2.81	4206	3.37	11722	3.3
5	Business & commerce	13200	20.72	29304	23.46	83472	23.5
6	Transport and Telecommunication	7270	11.41	7400	5.92	19536	5.5
7	Other services	16250	25.52	32432	25.96	92352	26.0
TOTAL LABOUR		63698	100	125908	100	355200	100
Percentage of labour in total population		257065	24.78	490202	25.48	1184000	30.0

Today, the situation is changed. There is over-crowding, congestion, pollution, insanitation in the upper kot area, where the majority of the cottage industries are located. People are moving out of the area and the houses left vacant are taken up by the industrial units. Small units are located in a single room, some are on an entire floor of the house and some are in the basements.



There was an initiative in industrial planning in the form of Talanagari in the year 1991-92, but due various reasons, it has failed miserably in today's scenario. Other industrial sites marked way back then have to be closed down. Talanagari exists today but besides the few industrial units that shifted there in the initial phase no new additional industrial development has taken place at the site. Now it is being used for residential and

commercial development and there is no one to check that development. The authorities are turning a blind eye to the situation of Talanagari.

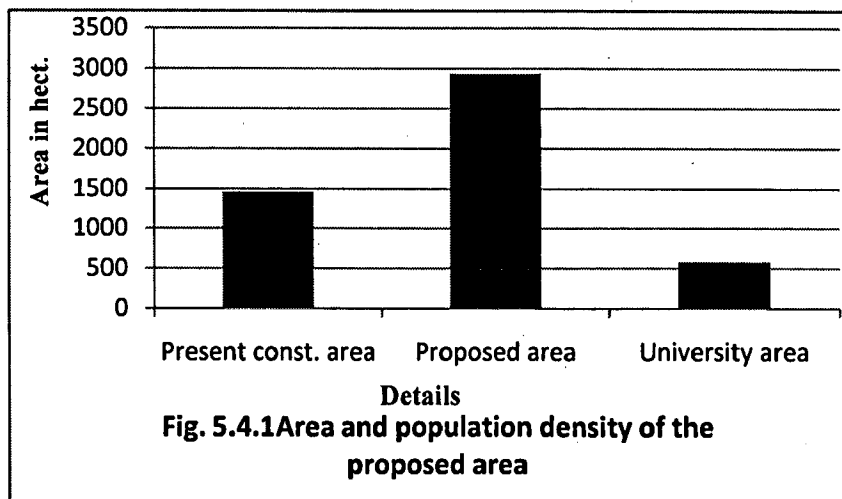
5.4 LAND USES

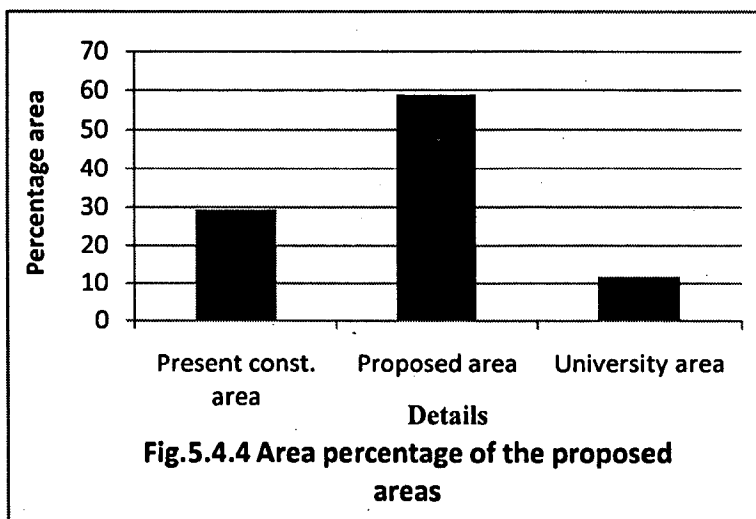
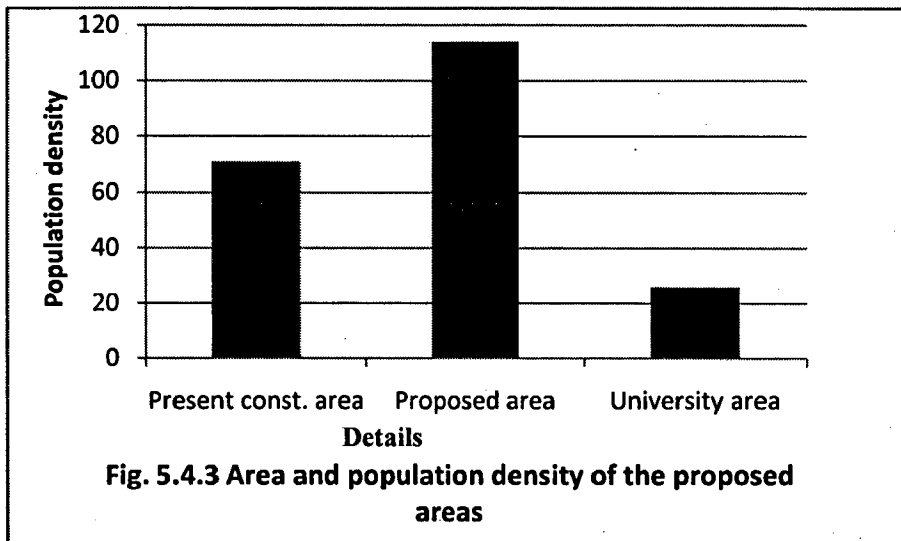
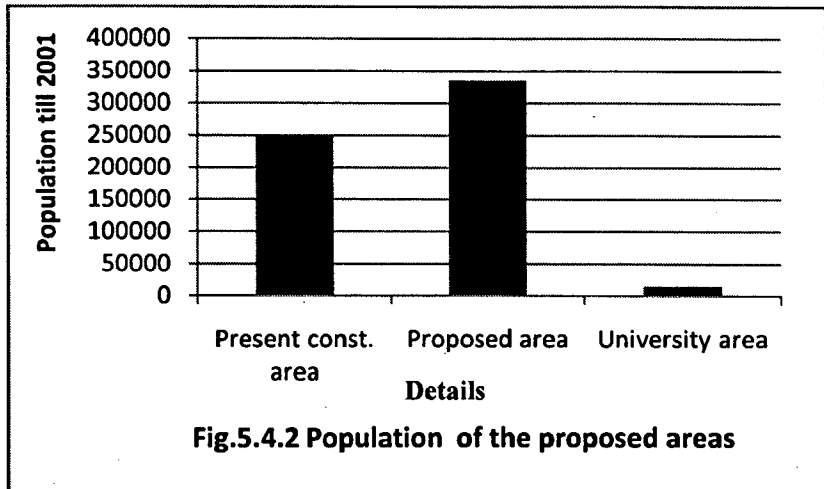
The development proposals in the Master plan have been into the following 3 parts:

1. Present constructed area.
2. New proposed development.
3. Present university and its future extension.

Table 5.4 Area and population density of the proposed areas

Part	Details	Area	Population till 2001	Population density(hect)	Area percentage
1	Present constructed area	1460	250000	71	29.4
2	Proposed area	2940	335000	114	58.9
3	University area	580	15000	26	11.7
	TOTAL	4980	600000	120	100.0





The Aligarh Master plan 2001 classifies the land uses in the following categories:

1. Residential
2. Commercial
3. Industrial
4. Government, semi-government and other offices
5. Civic facilities
6. Transportation
7. Open areas
8. University area

Table 5.5 Proposed land uses in Aligarh Master plan 2001

S. No.	Land use	Area(ha)	Percentage
1	Residential	2200	44.1
2	Commercial	180	3.6
3	Industrial	510	10.2
4	Govt. semi govt. and other offices	100	2.1
5	Community facilities	350	7.1
6	Traffic and Transport	660	13.3
7	Open area	400	8.0
8	University	580	11.6
	TOTAL	4980	100.0

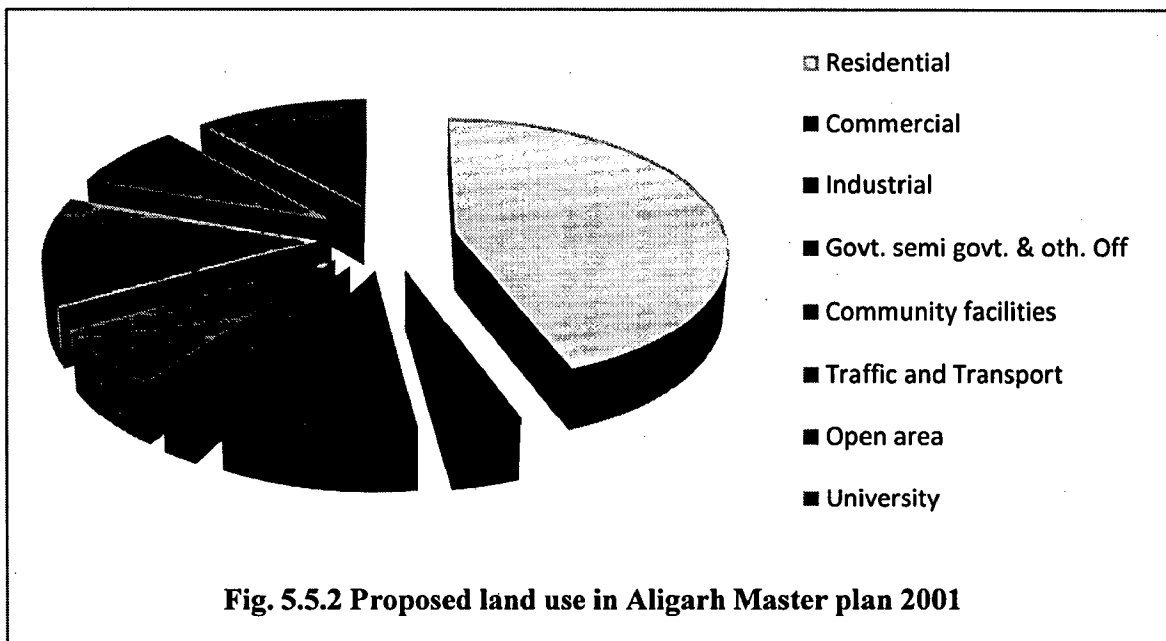
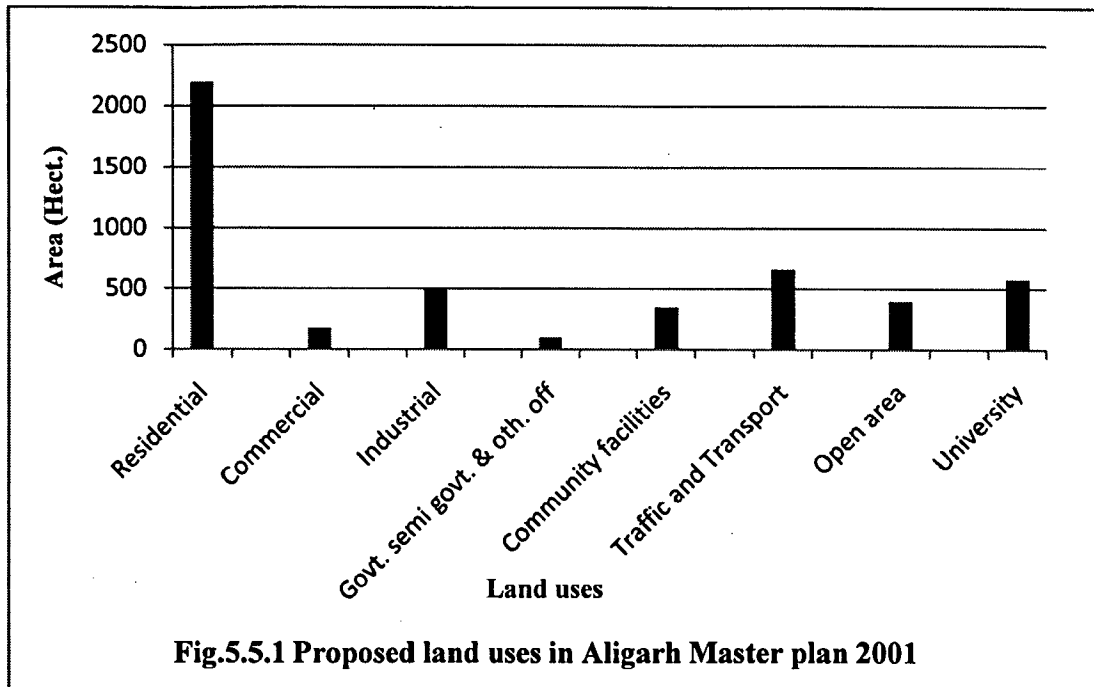


Table 5.6 Present land use of Aligarh city

S. No.	Land use	Area	Percentage
1	Present constructed area	1142.32	25.5
2	Residential	1340.61	29.9
3	Commercial	63.93	1.4
4	Industrial	323.44	7.2
5	Govt. semi govt. and other offices	158.81	3.5
6	Civil facilities	626.98	14.0
7	Transportation		
7.1	Railway	186.72	4.2
7.2	Bus stand	15.40	.4
7.3	Current ways	346.33	7.7
8	Open area & park		
8.1	Park	28.70	0.6
8.2	Garden	42.,50	0.9
8.3	Water body	152.85	3.4
9	Others		
9.1	Religious place	11.52	0.3
9.2	Mortuary	42.34	1.1
	Total	4482.45	100

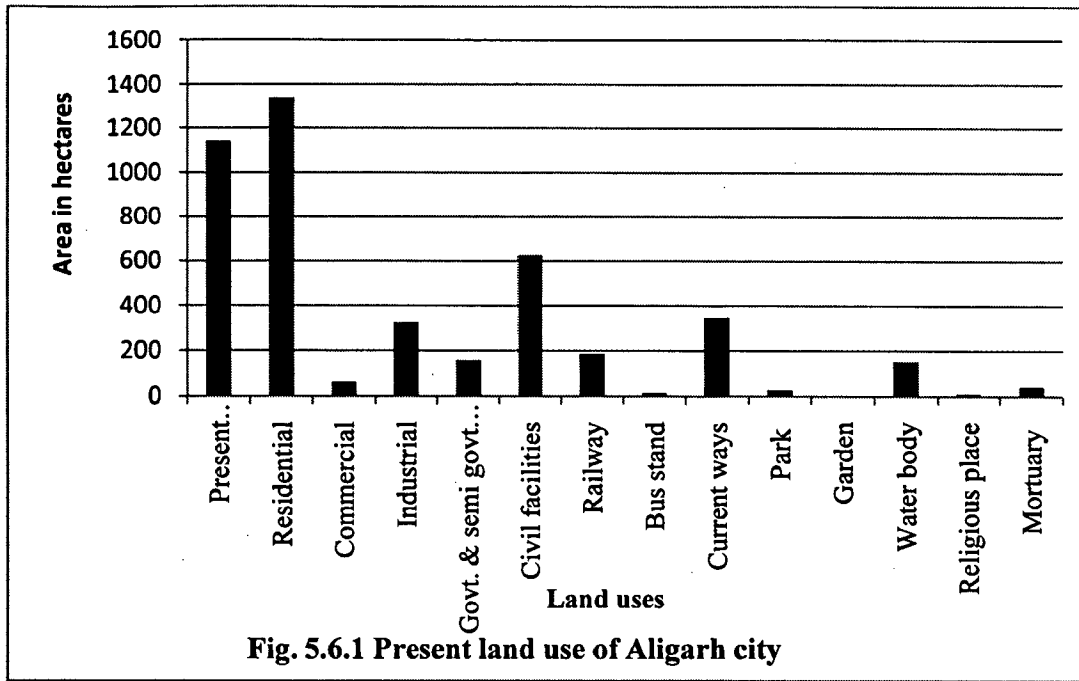


Fig. 5.6.1 Present land use of Aligarh city

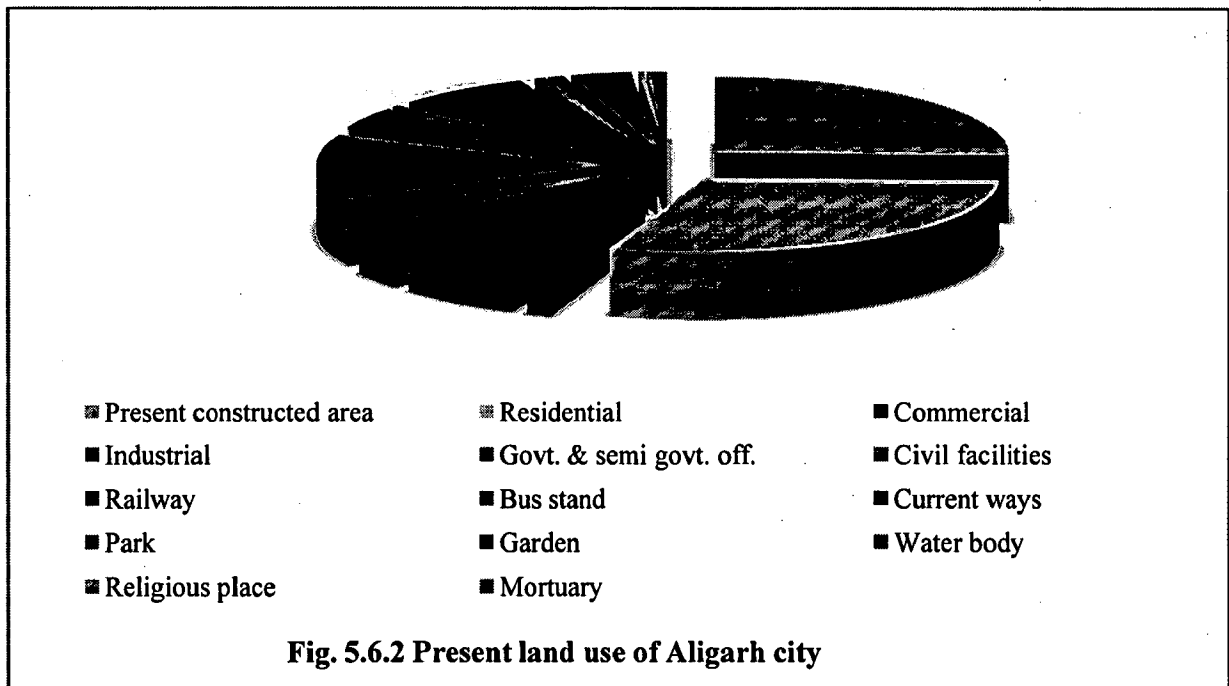


Fig. 5.6.2 Present land use of Aligarh city

Table 5.7 Aligarh Master plan 2021 proposed land uses

S. no.	Land use	Area(hect)	Percentage
1	Residential		
1.1	Present constructed housing (high density)	1138.48	
1.2	Residential(medium density)	1908.08	
1.3	Residential(low density)	3081.74	
	Total	6128.03	53.42
2	Commercial		
2.1	City commercial centre	202.28	
2.2	Wholesale commercial center	56.64	
	Total	158.92	2.26
3	Industry		
3.1	Small industry	445.85	
3.2	Heavy industry	612.61	
3.3	Small industry cum residential	19.24	
	Total	1077.7	9.40
4	Office	343.24	2.99
5	Community facilities		
5.1	Community facilities	428.95	
5.2	Universities	514.00	
	Total	942.95	8.22
6	Park and open spaces		
6.1	Park	432.79	

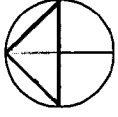
6.2	Green belt	411.24	
6.3	Exhibition space	17.84	
6.4	Garden	42.5	
6.5	Regional park	205.00	
	Total	1109.37	9.67
7	Traffic and transportation		
7.1	Transportnagar	38.40	
7.2	Bus stand	38.40	
7.3	Present road ways	391.94	
7.4	Proposed ways	428.02	
7.5	Railways land	428.02	
	Total	1083.66	9.45

5.4.1 Residential area

In the Aligarh Master plan 2021, 2200 hectare of land has been proposed for the development of residential area in the city. Out of this 724 hectares of land has been regularized while the remaining 1476 hectares is spread out on the Kanpur road, Mathura road, Kanpur-Agra road, Agra-Mathura road, Mathura-Khair road, Khair-Delhi road, Delhi-Anoopshahar road, Anoopshahar road and in between Ramghat road and 53m wide proposed road.

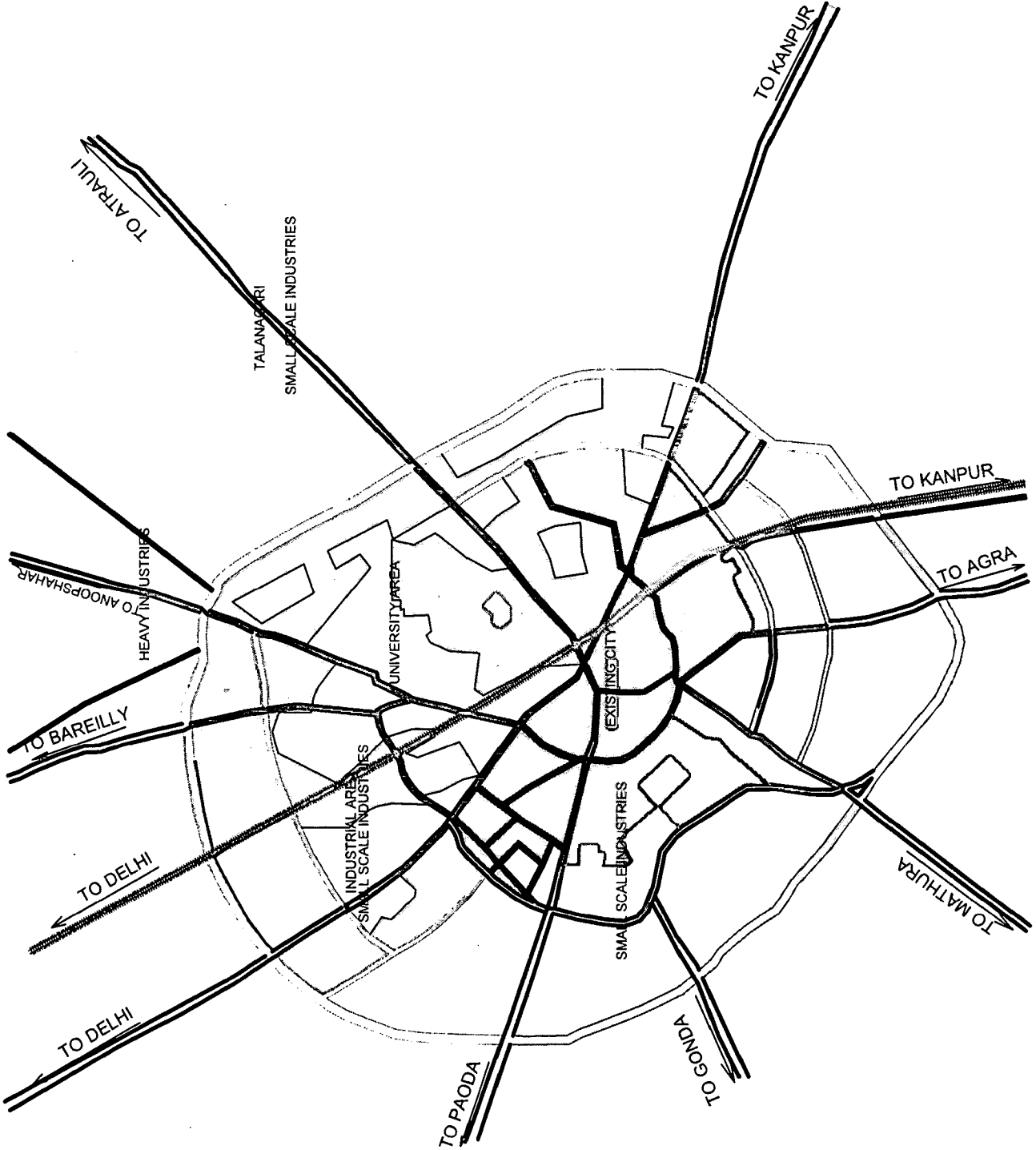
Table 5.8 Housing stock statistics of Aligarh in year 1991

City	Area	Population	No. of households	Average family size	Total no. dwelling units	Shortage
Aligarh	33.98	4,80,520	69,797	6.9	54,113	15,684



S. NO	SYMBOLS	LAND USE
1.	[Symbol]	RESIDENTIAL-INDUSTRIAL
2.	[Symbol]	RESIDENTIAL HIGH DENSITY
3.	[Symbol]	RESIDENTIAL MEDIUM DENSITY
4.	[Symbol]	EXISTING ROADS
5.	[Symbol]	PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: EXISTING RESIDENTIAL PLAN	
KHAN AMADUR RAHMAN	DATE- JUNE 2008
ROLL NO. - 062204	SCALE- 1:50000
MURP II YEAR	
DEPARTMENT OF ARCHITECTURE AND PLANNING	
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PLAN.5.2 ALIGARH CITY: EXISTING RESIDENTIAL PLAN(1:50000)

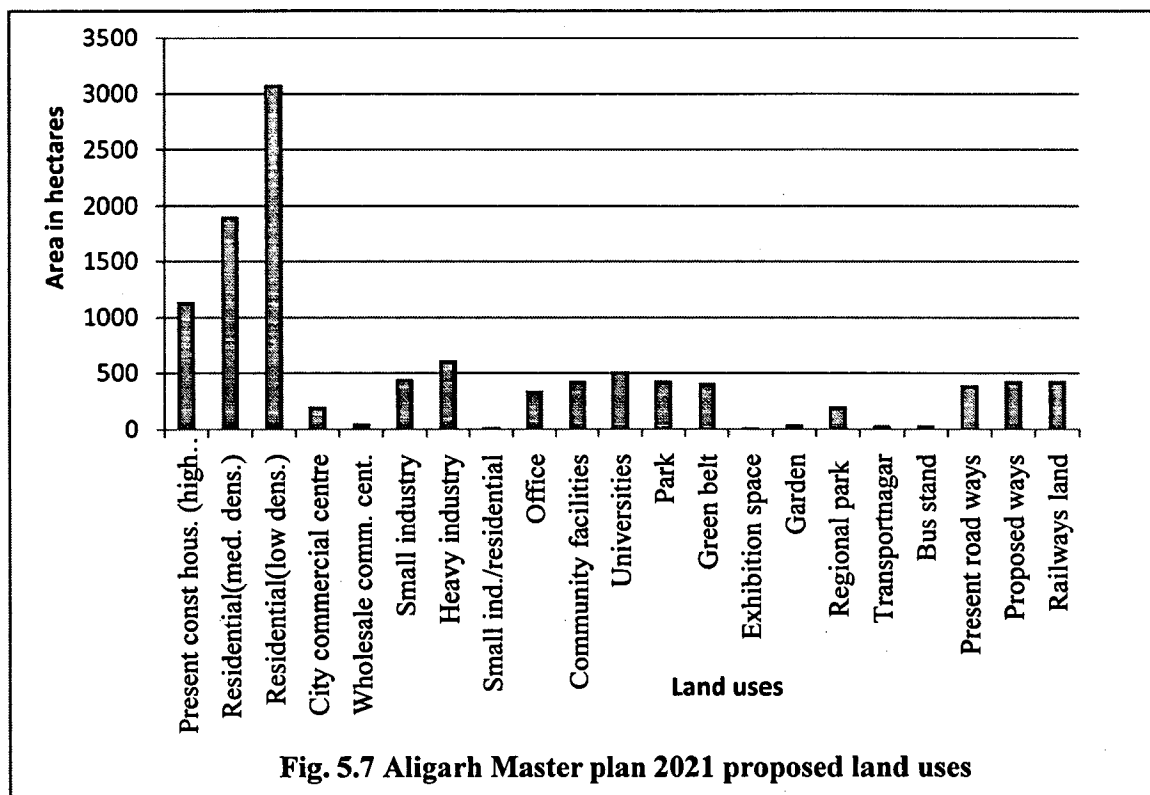


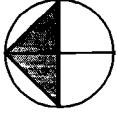
Fig. 5.7 Aligarh Master plan 2021 proposed land uses

Table 5.9 Future needs of residential areas in Aligarh city

S. no.	Details	1991	2021
1	Population	490202	1309000
2	Extra population	--	818798
3	Average size of the family	7	5
4	No. of family	71275	---
5	Available residential units	55591	---
6	Extra families	--	163759
7	Backlog in residential units	15684	---
Need of total residential units			179443

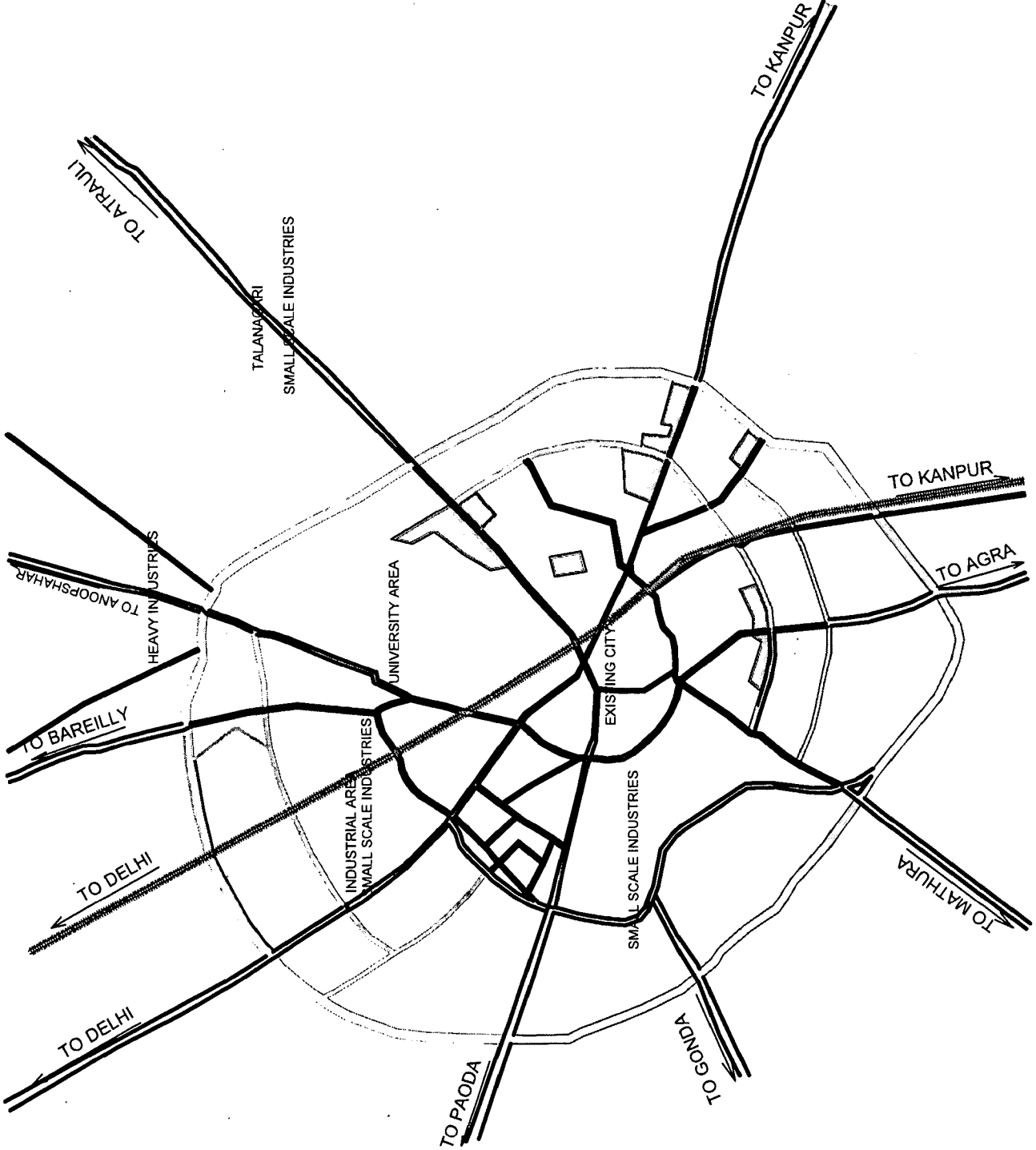
5.4.2 Commercial area

In the earlier Master plan commercial areas were proposed along the Ramghat road, G.T. road and near Malaviya library. But these areas failed to develop as expected and so all the activities that were proposed to be shifted away from the city core are still functioning



S. NO.	SYMBOLS	LAND USE
1.		COMMERCIAL AREA
2.		EXISTING ROADS
3.		PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE	
INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: COMMERCIAL PLAN	
KHAN AMADUR RAHMAN	DATE- JUNE 2008
ROLL NO. - 062204	SCALE- 1:50000
MURP II YEAR	
DEPARTMENT OF ARCHITECTURE AND PLANNING	
IIT ROORKEE, ROORKEE-247667	



PLAN.5.5 ALIGARH CITY: COMMERCIAL PLAN(1:50000)

there. This has led to traffic congestion and other operational problems on Railway road, Rasalgunj, Barahdwari, Mahavirgunj, Bada bazaar, Jama masjid area and Sarai hakim. In the Master plan 2021 commercial areas are proposed along the important roads in the city in the form of commercial strips.

5.4.3 Industrial

According to the Master plan 2001 land was marked on the Kanpur road for small scale industry and on Delhi road for heavy industries. But the site on the Kanpur road later on developed as residential and commercial area. No industrial development took place. The present industrial development took place mainly on the Anoopshahar road near the railway crossing and the Delhi road.

The Uttar Pradesh industrial development board proposed an industrial site on the Ramghat road known as Talanagari. This site again turned out to be an utter failure as very few industries are operating there and the lock industries as earlier are still operating in the residential areas of the old city as cottage industries. Besides this the Uttar Pradesh industrial development board has proposed an industrial estate on the Delhi road which is operating well.

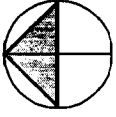
Table 5.10 Industrial Units (1999) in Aligarh city

S. No.	Types of Industries	Working Units	No. of Labours
1.	Cottage Industries	4662	23901
2.	Large Industries	11	1881
	Total	4673	25,782

Source: District Industries Office Year 1999

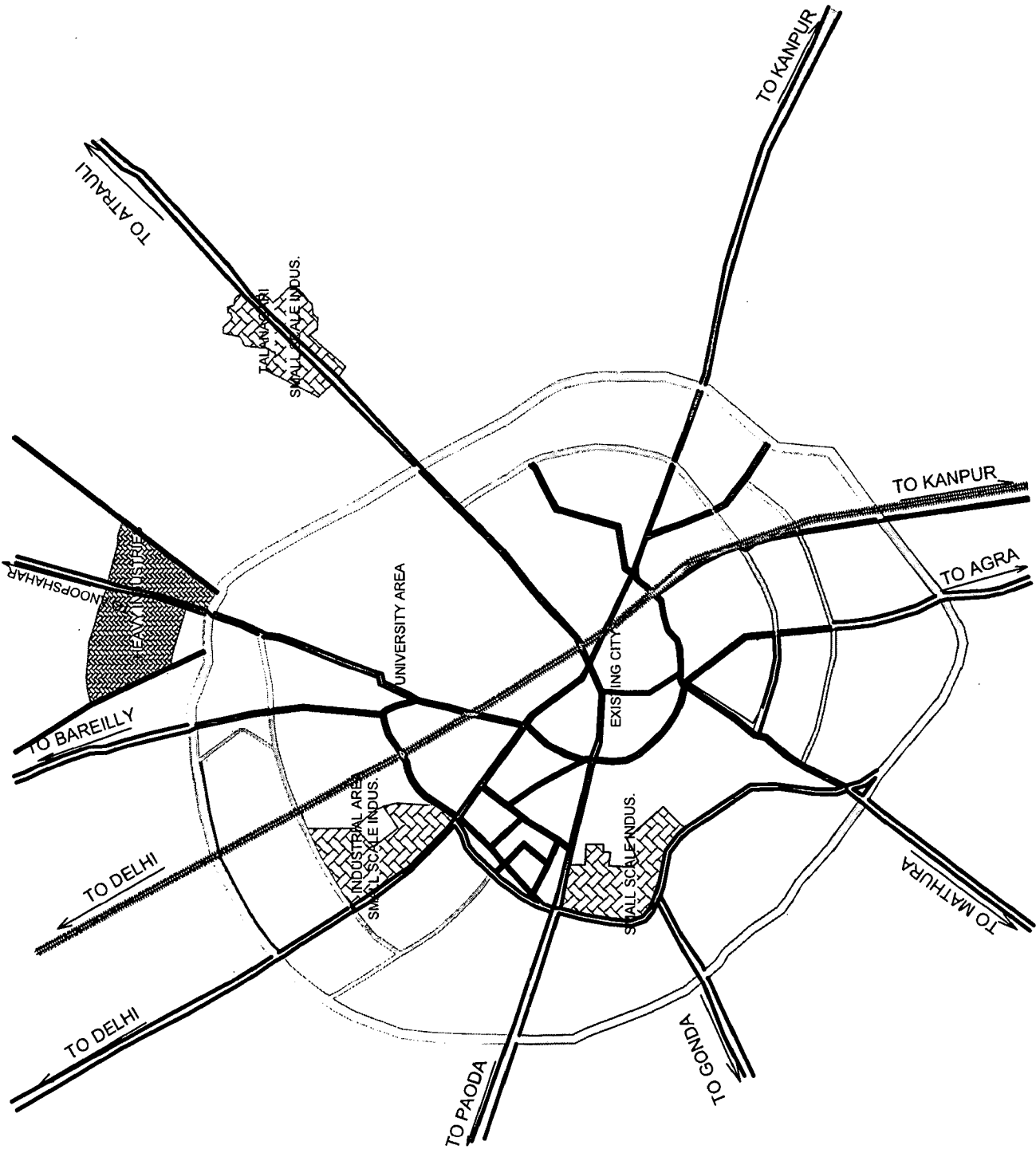
5.4.4 Government and semi-government offices

Most of the offices in the city are situated in the civil lines area and Ramghat road. These offices include district court, public works department, treasury, electricity department,



S. NO	SYMBOLS	LAND USE
1.		SMALL SCALE INDUSTRIES
2.		HEAVY INDUSTRIES
3.		EXISTING ROADS
4.		PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE	
INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: INDUSTRIAL PLAN	DATE: JUNE 2008
KHAN AMADUR RAHMAN	ROLL NO. - 062204
MURP II YEAR	SCALE: 1:50000
DEPARTMENT OF ARCHITECTURE AND PLANNING	
IIT ROORKEE, ROORKEE-247687	

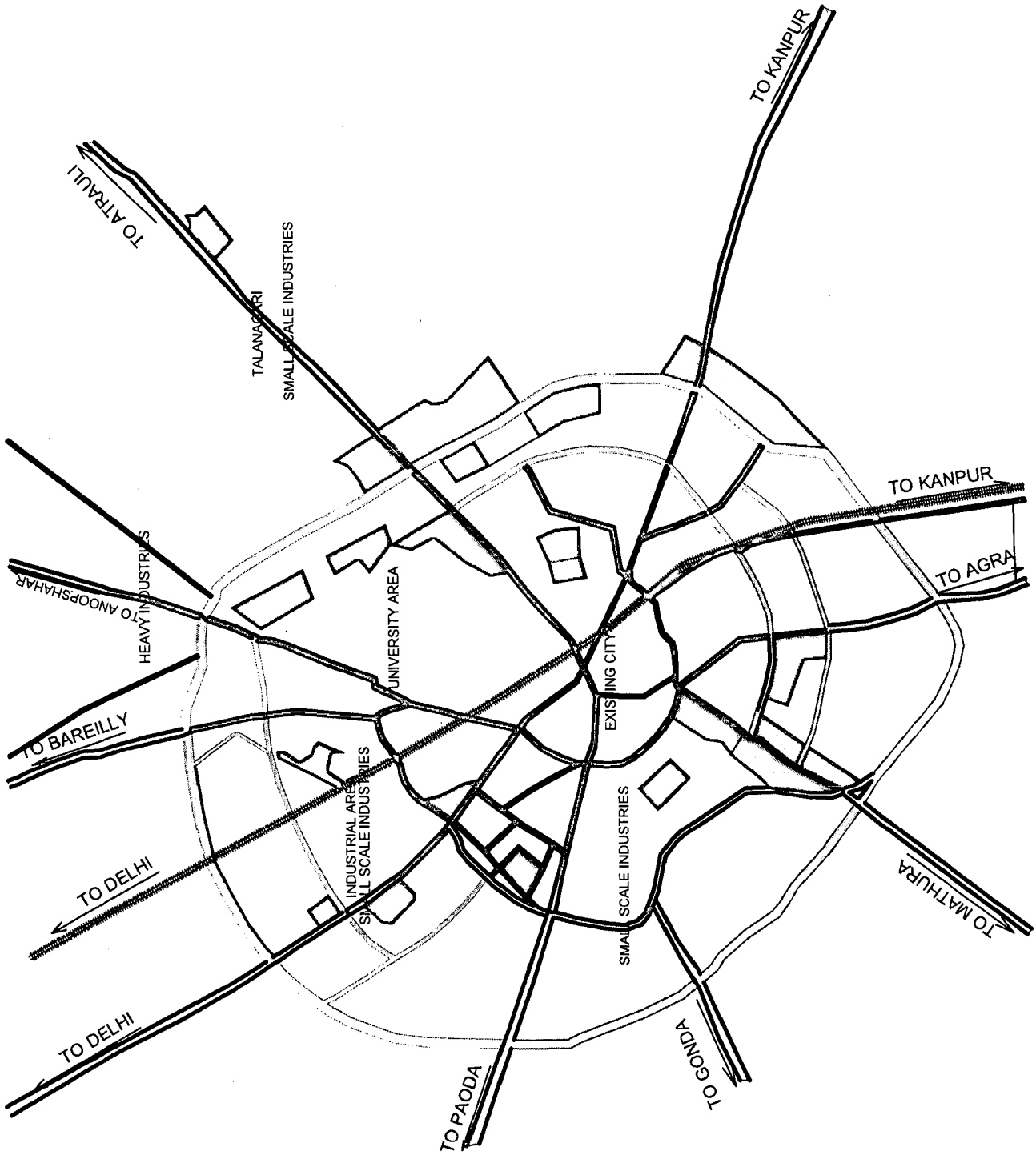


PLAN.5.6 ALIGARH CITY: INDUSTRIAL PLAN(1:50000)

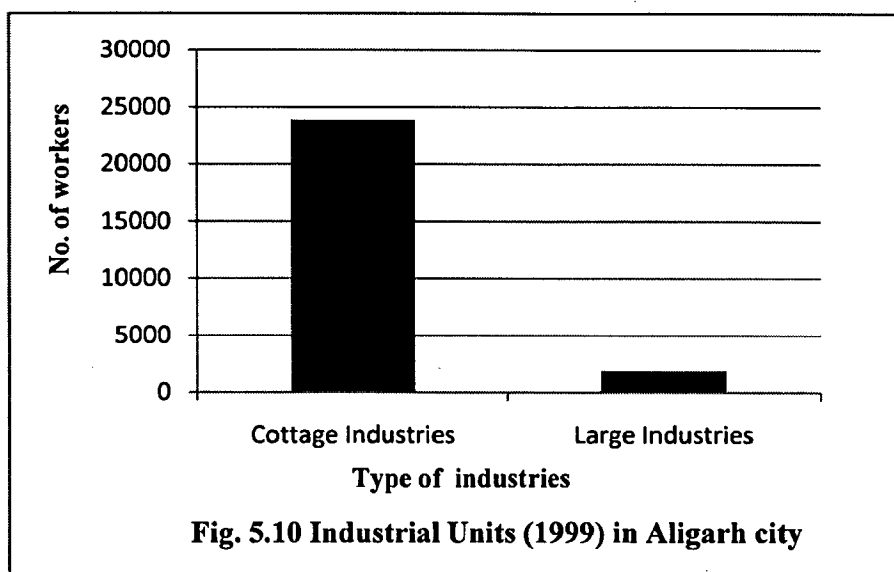


S. NO.	SYMBOLS	LAND USE
1.	[Symbol: Thin rectangle]	OFFICES
2.	[Symbol: Thick rectangle]	EXISTING ROADS
3.	[Symbol: Dashed rectangle]	PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE	
INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: OFFICES PLAN	
KHAN AMADUR RAHMAN	DATE: JUNE 2008
ROLL NO.- 062204	SCALE: 1:50000
MURP II YEAR	
DEPARTMENT OF ARCHITECTURE AND PLANNING	
IIT ROORKEE, ROORKEE-247667	



PLAN.5.7 ALIGARH CITY: OFFICES PLAN(1:50000)



government press, R.T.O. Aligarh development authority, irrigation department, telegraph office, head post office, tehsil and industrial institution, vikas bhawan, PAC, etc. Besides this Mandi samiti office on G.T. road is also proposed.

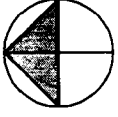
Table 5.11 Govt. and Semi govt. Offices in Aligarh

S. No.	Name of Office	No. of Offices	No. of Workers
1.	Central Govt.	13	4,464
2.	State Govt.	124	13,797
3.	Semi Govt. and ---- offices	106	7,987
	Total	243	26,248

Source: District Planning Service Office Year 1999

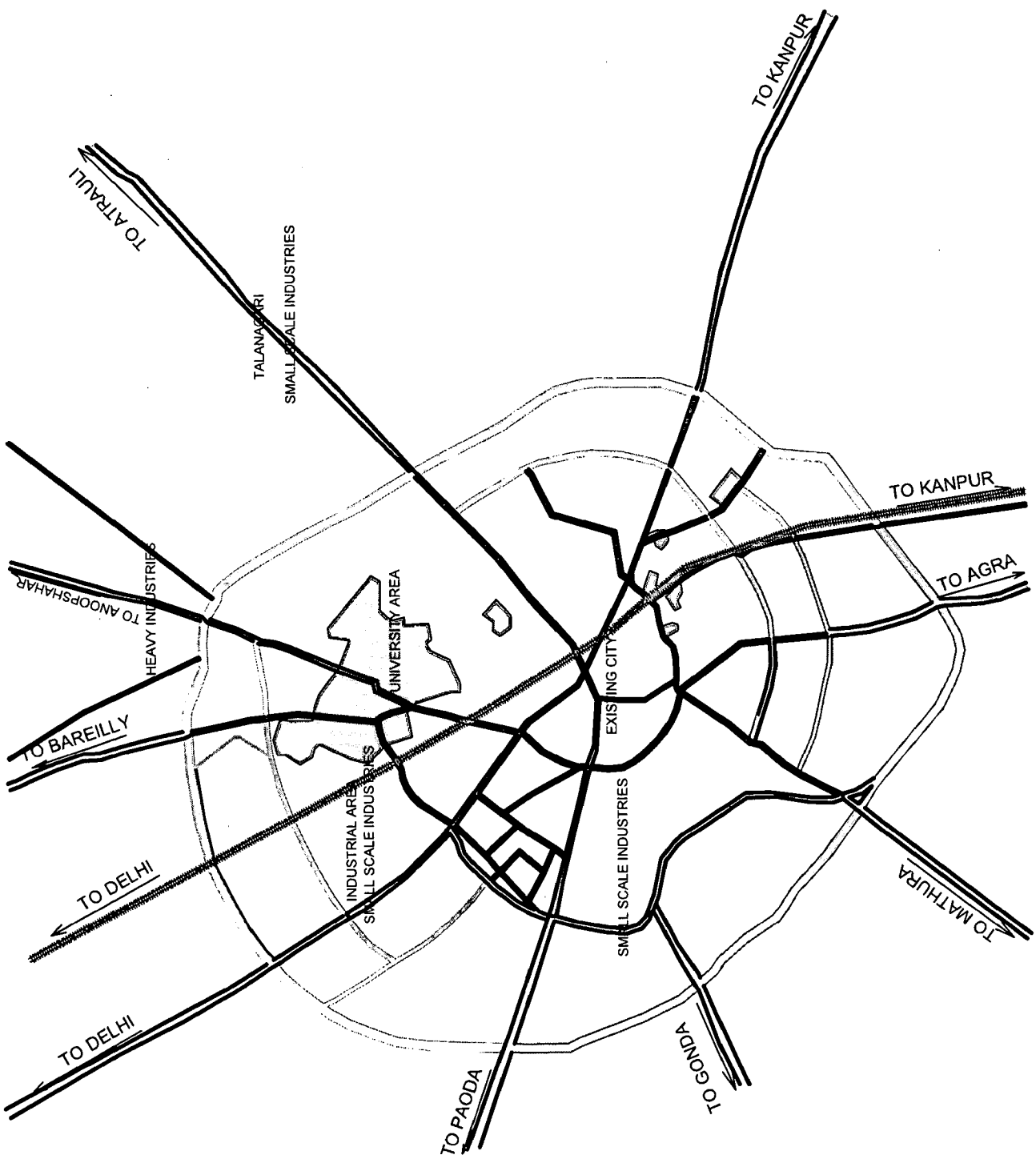
5.4.5 Community facilities

It is estimated that by the year 2021 10 more colleges will be needed in the city. So land has been earmarked for them in the present Master plan. Estimating a need of 2400 more beds, 9 hospitals, 24 health centres and 60 dispensaries have been proposed. Besides the existing health facilities in the city, 15 Allopathic hospitals, 8 primary health centres, 1 Ayurvedic hospital, 1 Unani hospital, 1 Homoeopathic hospital, and 7 maternity centres

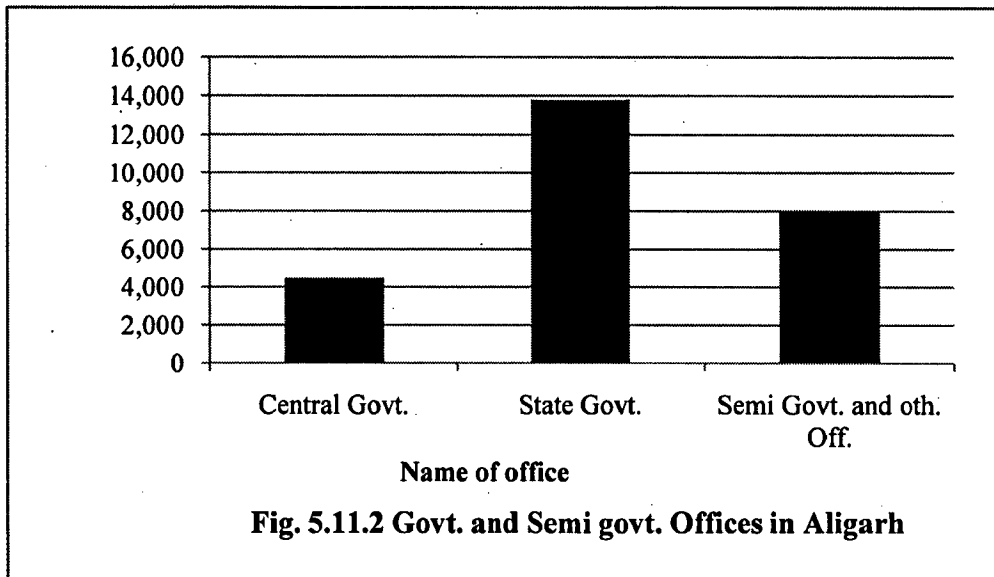
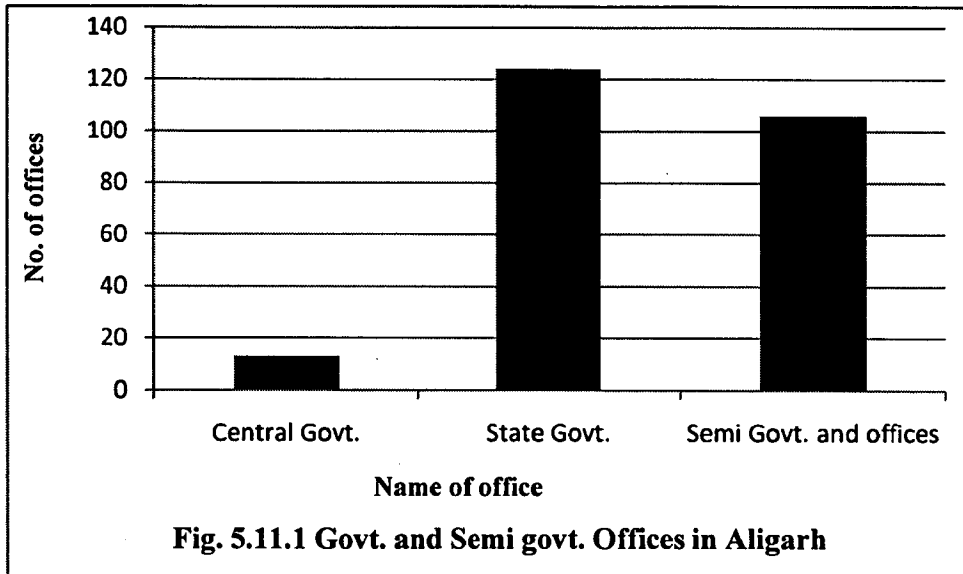


S. NO	SYMBOLS	LAND USE
1.	[Symbol: Dotted pattern]	UNIVERSITY AND COLL.
2.	[Symbol: Horizontal lines]	EXISTING ROADS
3.	[Symbol: Vertical lines]	PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: INSTITUTIONAL PLAN	
KHAN AMADUR RAHMAN	DATE- JUNE 2008
ROLL NO.- 062204	SCALE- 1:50000
MURP II YEAR	
DEPARTMENT OF ARCHITECTURE AND PLANNING	
IIT ROORKEE, ROORKEE-247667	



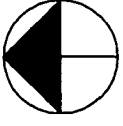
PLAN.5.8 ALIGARH CITY: INSTITUTIONAL PLAN(1:50000)



have been proposed near the Ramghat road. 1 fire station, 10 sub fire stations, 8 police stations, 8 head post offices, 60 post offices and 24 cinema halls have been estimated.

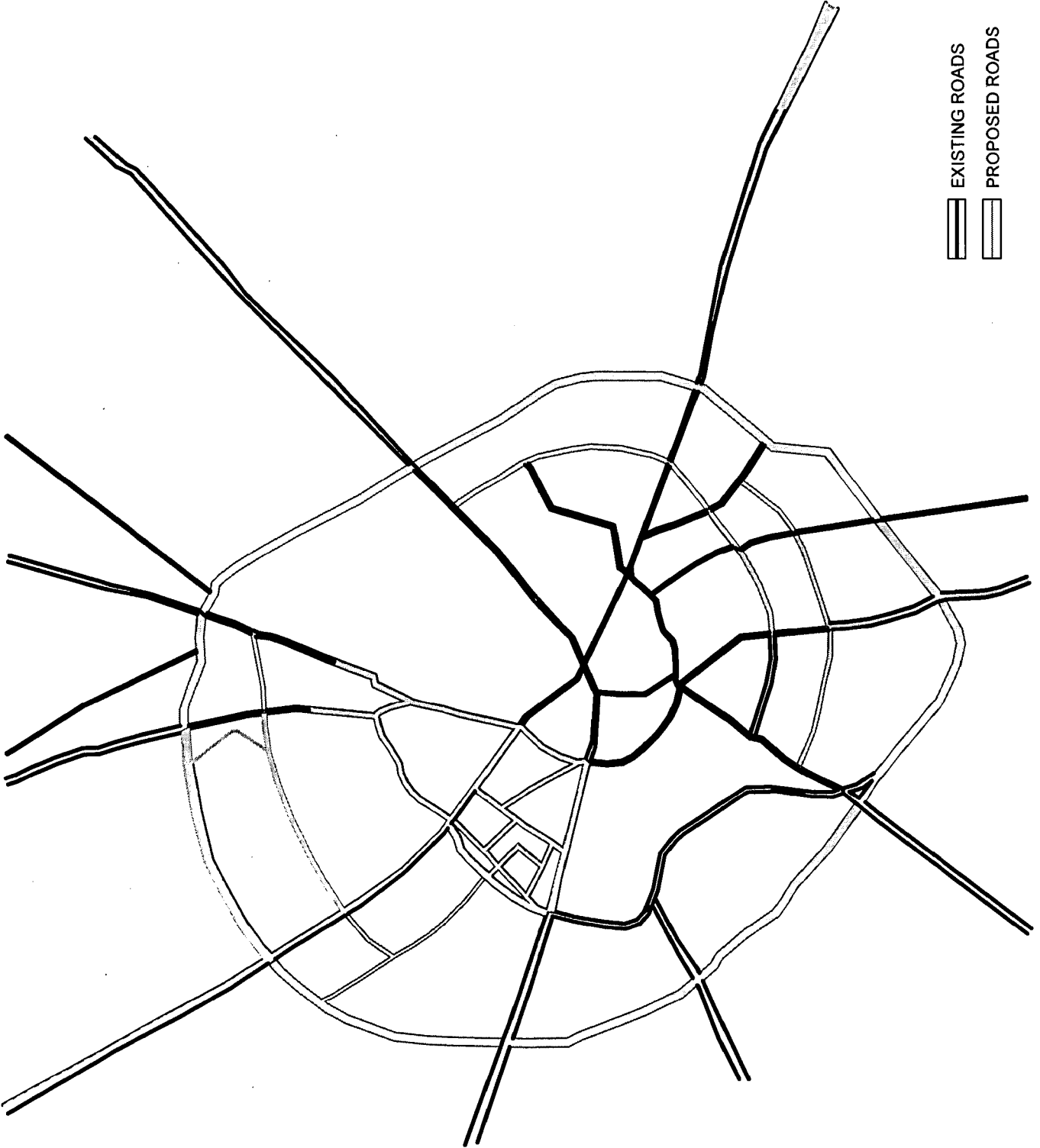
5.4.6 Traffic and transport

In the present Master plan 660 hectares of land has been marked for traffic and transport which includes 39 hectares for transportnagar, 20.7 hectares for bus stand 294.3 hectares for the proposed roads. Illegal construction of Uttar Pradesh transport corporation workshop took place on the G.T. road. Besides this the land for bus stand has been



S. NO.	SYMBOLS	LAND USE
1.		EXISTING ROADS
2.		PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE	
INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: ROAD NETWORK PLAN	
KHAN AMADUR RAHMAN	DATE - JUNE 2008
ROLL NO. - 062204	SCALE - 1:50000
MURP II YEAR	
DEPARTMENT OF ARCHITECTURE AND PLANNING	
IIT ROORKEE, ROORKEE-247667	



EXISTING ROADS
 PROPOSED ROADS

PLAN.5.9 ALIGARH CITY: ROAD NETWORK PLAN(1:50000)

occupied by squatters. The proposal for a central bus station is also under consideration on the Delhi road.

5.4.7 Open spaces, parks and playgrounds

In the Master plan 2001 400 hectares of land was marked for open spaces which includes 164 hectares for parks and playgrounds. But these lands were never developed as desired due to illegal occupants and squatters. So now the city has only Gandhi park, Jawahar park, Naqvi park and exhibition ground in the form of open space.

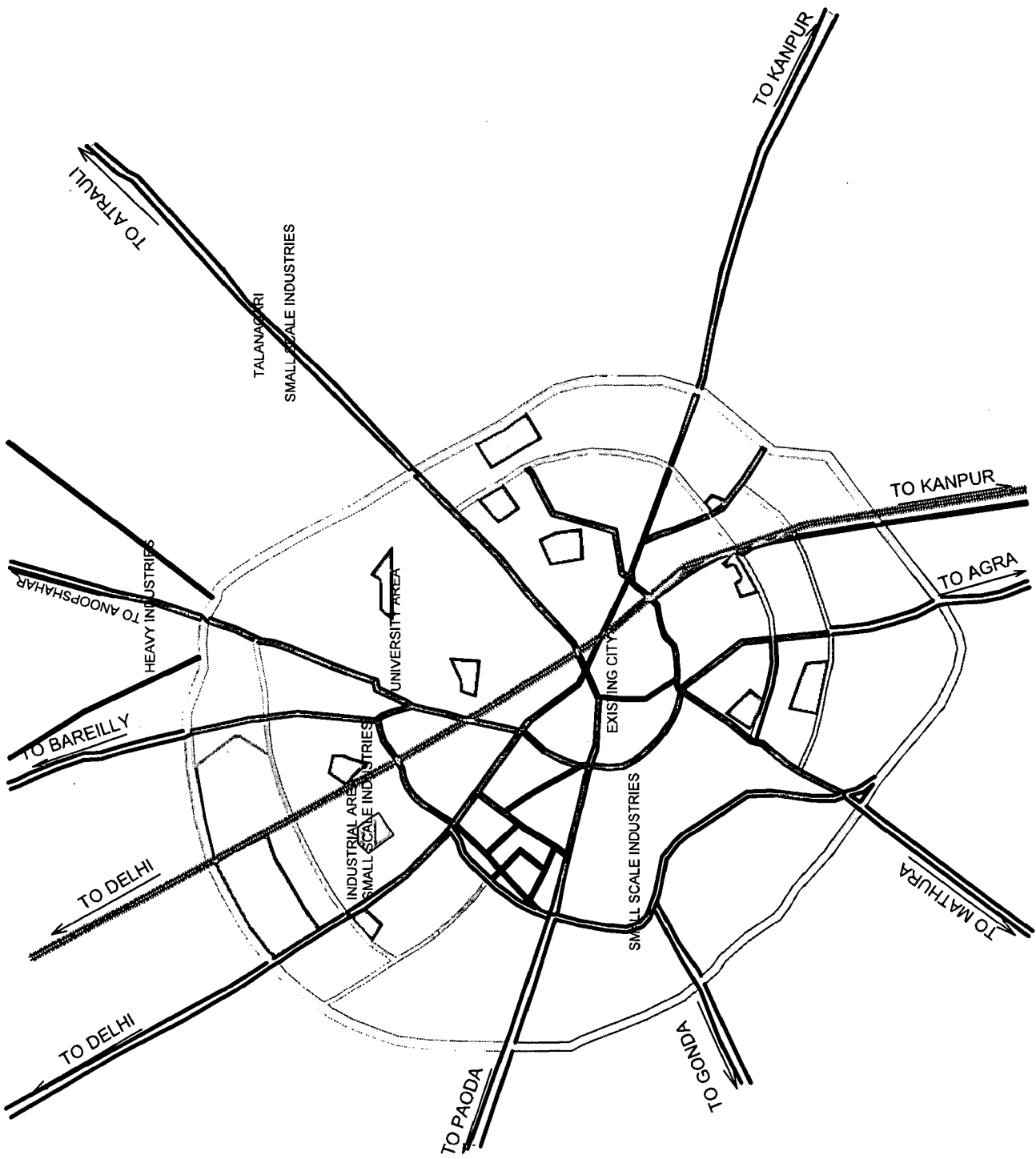
5.5 INFERENCES

The Aligarh city Master plan study indicates that there has been problem in the implementation of the Master plan proposals in the past. Moreover the proposals made were not in accordance to the trend of development. It was a major flaw in the previous Master plans. The Master plan 2001-2021 has taken this into account and made proposals in accordance to the trend of development. This also has lead to the regularization of many irregular colonies. Even many of the illegal industries have been regularized and the area on the Anoopshahar road has been declared an industrial area in the Master plan 2021. No methodology seems to have been employed in framing the proposals. This is an ambiguous trend adopted for the development of industries. This shall be taken into consideration while framing the proposals in the present study.



S. NO	SYMBOLS	LAND USE
1.		GREEN
2.		EXISTING ROADS
3.		PROPOSED ROADS

TITLE: PLANNING FOR REJUVANATION OF COTTAGE	
INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: GREEN AREA PLAN	DATE: JUNE 2008
KHAN AMADUR RAHMAN	SCALE: 1:50000
ROLL NO. - 062204	MURP II YEAR
DEPARTMENT OF ARCHITECTURE AND PLANNING	
IIT ROORKEE, ROORKEE-247687	



PLANL .5.10 ALIGARH CITY: GREEN AREA PLAN(1:50000)

CHAPTER 6: ANALYSIS AND FINDINGS

6.1 INTRODUCTION

To assess the present state of development all the parameters of the system should be analysed. The secondary data available for the present study is from the 2001 census. In order to assess the present status of development of the industries and socio-economic condition of the workers and the industry owners it was necessary to have first hand data. The details required for conducting the study was also not available in the secondary data. So a primary survey was carried out in the study area to assess the conditions of the families engaged in the cottage industries and the industries themselves.

The primary survey was conducted in the year 2008 in the industrial as well as residential areas of the industry owners and industry workers. The localities covered in the survey included predominantly residential areas such as Jamaalpur, Jeevangarh, Dhorra, Bhamola, Hamdardnagar, Sir Syednagar, Jamai Urdu and commercial-industrial-residential areas in the heart of the city such as Upper Kot, Bhu ki sarai, Delhi gate, ADA colony.

The schedule for the survey was prepared and pre tested before employing in the field. For the industry owners 40 samples were collected while 60 samples were collected for the industrial labourers. The schedules were classified according to the income. For the industry owners 8 income groups were considered starting from 3000 to more than 40000. For the industrial labourers 6 income groups were made, lowest being 3000 to the highest being 18000.

The information collected by the schedule includes the following:

1. Demographic characteristics:
 - Population
 - Family size

- Sex
- Literacy
- Age
- Occupation
- Present address
- Permanent address

1.1 Socio-economic characteristics:

- Religion
- Caste
- Size of household
- Monthly income and expenditure
- Household appliances

2. Housing condition:

- Type of dwelling unit
- Age of the dwelling unit
- Physical condition
- Ownership
- Number of rooms
- Number of floors
- Finance

3. Industry

- Type of the industry
- Number of workers
- Raw material used
- Turnover
- Net profit
- Sources of energy
- Pollutants

- Source of raw material
- Supply of finished good

4. Physical infrastructure:

4.1 Transportation

- Type of road
- Maintenance of the road
- Vehicles owned

4.2 Water supply

- Supply system
- Time of supply
- Use of equipments

4.3 Electricity

- Availability
- Tariff
- Hours of availability
- Metered/unmetered

4.4 Drainage/Sewage system

- Availability of system
- Drains type
- Problems of drains

4.5 Waste disposal

- Method of collection
- Frequency of collection
- Agency of collection

5. Environmental characteristics

- 5.1 Water quality
- 5.2 Air quality
- 5.3 Land quality
- 5.4 Noise pollution

6. Quality of life

ANALYSIS

The analysis of the data collected by the primary survey is as follows:

6.2 ANALYSIS FOR THE INDUSTRY LOBOURERS

6.2.1 Demographic characteristics:

Table 6.2.1. Total number of persons in a family:

Serial No.	Income category	Total number of families:			Total
		1-3 persons	4-6 persons	More than 6 persons	
1	≤3000	0	3(6.67)	0	3(5)
2	3001 – 6000	13(92.86)	25(55.55)	0	38(63.33)
3	6001 – 9000	1(7.14)	14(31.11)	0	15(25)
4	9001-12000	0	2(4.44)	0	2(3.33)
5	12001-15000	0	0	1(100)	2(3.33)
6	15001-18000	0	1(2.22)	0	2(3.33)
	Total	14(23.33)	45(75)	1(1.67)	60(100)

The number of households with a family size of 4-6 persons is 75%. None of the families in the higher income group has a family size less than 4. It indicates that the size of the family increases as the income increases. It also indicates that greater the family size greater is the income of the family.

Table 6.2.2 Total number of males in a family:

Serial No.	Income category	Total number of families:			Total
		1-2 males	3-4males	More than 4 males	
1	≤3000	3(5.76)	0	0	3(5)
2	3001 – 6000	37(71.15)	1(14.28)	0	38(63.33)
3	6001 – 9000	11(21.15)	3(42.85)	1(100)	15(25)
4	9001-12000	0	2(28.56)	0	2(3.33)
5	12001-15000	0	1(14.28)	0	2(3.33)
6	15001-18000	1(1.92)	0	0	2(3.33)
	Total	52(86.67)	7(11.67)	1(1.67)	60(100)

The number of households with 1-2 males in the family is 86.67% while only 11.67% have 3-4 males in their families.

Table 6.2.3 Total number of females in a family:

Serial No.	Income category	Total number of families:		Total
		1-2 females	3-4 females	
1	≤3000	3(5)	0	3(5)
2	3001 – 6000	38	0	38(63.33)
3	6001 – 9000	15(25)	0	15(25)
4	9001-12000	2(3.33)	0	2(3.33)
5	12001-15000	1(16.67)	0	2(3.33)
6	15001-18000	1(16.67)	0	2(3.33)
	Total	60(100)	0	60(100)

The family size being small none of the household has more than 2 females.

Table 6.2.4 Total expenditure in various income groups:

Serial No.	Income category	Total number of persons in a family:				Total
		≤2500	2500-5000	5000-7500	7500-10000	
1	≤3000	3(16.67)	0	0	0	3(5)
2	3001 – 6000	15(83.33)	23(65.72)	0	0	38(63.33)
3	6001 – 9000	0	12(34.28)	2(100)	1(20)	15(25)
4	9001-12000	0	0	0	2(40)	2(3.33)
5	12001-15000	0	0	0	1(20)	2(3.33)
6	15001-18000	0	0	0	1(20)	2(3.33)
	Total	18(30)	35(58.33)	2(3.33)	5(8.33)	60(100)

Majority of the people lie in the income group 3001-6000 and expenditure group 2500-5000. The savings for this group is the least. Their expenditure is governed by the number of school going children and the standard of life they maintain.

Age groups:

Table 6.2.5 Total number of persons in 0-5 age group:

Serial No.	Income category	Total number of persons in a family:		Total
		1-2	3-4	
1	≤3000	2(8.33)	0	2(3.33)
2	3001 – 6000	20(83.33)	0	20(33.33)
3	6001 – 9000	2(8.33)	0	2(3.33)
4	9001-12000	0	0	0
5	12001-15000	0	0	0
6	15001-18000	0	0	0
	Total	24(40)	0	24(40)

Only 40% of the respondents have members of their families in the age group of 0-5 years. The majority of them (33.33%) are in the 3001-6000 category. The higher income groups do not have any member in the age group of 0-5 years. This indicates that as the average age of the family grows there is an increase in its income.

Table 6.2.6 Total number of persons in 6-15 age group:

Serial No.	Income category	Total number of persons in a family:		Total
		1-2	3-4	
1	≤3000	1(3.33)	0	1(1.67)
2	3001 – 6000	19(63.33)	3(42.86)	22(36.67)
3	6001 – 9000	8(26.67)	4(57.14)	12(20)
4	9001-12000	2(6.67)	0	2(3.33)
5	12001-15000	0	0	0
6	15001-18000	0	0	0
	Total	30(50)	7((11.67)	37(61.67)

Out of the total house holds 61.67% of the respondents lie in the age group of 6-15 years. The family size being the number of members in the 3-4 persons category is only 11.67%.

Table 6.2.7 Total number of persons in 16-30 age group:

Serial No.	Income category	Total number of persons in a family:		Total
		1-2	3-4	
1	≤3000	3(7.89)	0	3(5)
2	3001 – 6000	28(73.68)	2(40)	30(50)

3	6001 – 9000	5(13.15)	2(40)	7(11.33)
4	9001-12000	2(5.26)	0	2(3.33)
5	12001-15000	0	0	0
6	15001-18000	0	1(20)	1(1.67)
	Total	38(63.33)	5(8.33)	43(71.67)

71.67% of the respondents have persons in their families in the age group of 16-30. This shows that the families in the surveyed group are young. Moreover the lower income groups have more number of younger people. This indicates that the income of the family increases as the age of the family members increase.

Table 6.2.8 Total number of persons in 31-45 age group:

Serial No.	Income category	Total number of persons in a family:		Total
		1-2	3-4	
1	≤3000	0	0	0
2	3001 – 6000	14(50)	0	14(23.33)
3	6001 – 9000	11(39.28)	1(100)	12(20)
4	9001-12000	2(7.14)	0	2(3.33)
5	12001-15000	0	0	0
6	15001-18000	1(3.57)	0	1(1.67)
	Total	28(46.67)	1(1.67)	29(48.33)

Out of the total households 48.33% of the respondents have persons in the age group of 31-45. Almost half of the families have persons in the middle age group.

Table 6.2.9 Total number of persons in 46-60 age group:

Serial No.	Income category	Total number of families:		Total
		1-2	3-4	
1	≤3000	0	0	0
2	3001 – 6000	1(12.5)	0	1(1.67)
3	6001 – 9000	3(37.5)	0	3(5)
4	9001-12000	2(25)	0	2(3.33)
5	12001-15000	1(12.5)	0	1(1.67)
6	15001-18000	1(12.5)	0	1(1.67)
	Total	8(13.33)	0	8(13.33)

The total number of respondents in the 46-60 age group is 13.33%. This indicates that the old fellows are lesser in number in the households and most of the labourers own their own industrial units by the age of 45 years.

Education:**Table 6.2.10 Number of persons with below or primary education in a family:**

Serial No.	Income category	Total number of families:		Total
		1-2	3-4	
1	≤3000	1(2.77)	1(100)	2(3.33)
2	3001 – 6000	23(63.88)	6(60)	29(48.33)
3	6001 – 9000	11(30.55)	3(30)	14(23.33)
4	9001-12000	1(2.77)	0	1(1.67)
5	12001-15000	0	0	0
6	15001-18000	0	0	0
	Total	36(60)	10(16.67)	46(76.67)

Out of the total households 60% of the respondents have 1-2 persons in the primary classes. The total families in this group are 76.67%.

Table 6.2.11 Number of persons with secondary education in a family:

Serial No.	Income category	Total number of families:			Total
		1-2 persons	3-4 persons	More than 4 persons	
1	≤3000	4(9.75)	0	1(50)	5(8.33)
2	3001 – 6000	27(65.85)	2(28.57)	0	29(48.33)
3	6001 – 9000	9(21.95)	4(57.14)	0	13(21.67)
4	9001-12000	0	1(14.28)	1(50)	2(3.33)
5	12001-15000	0	0	0	0
6	15001-18000	1(2.44)	0	0	1(1.67)
	Total	41(68.33)	7(11.33)	2(3.33)	50(83.33)

The secondary education is maximum in the 3001-6000 groups. The total respondent in this category is 83.33%.

Table 6.2.12 Number of persons with higher secondary education in a family:

Serial No.	Income category	Total number of families:		Total
		1-2 persons	3-4 persons	
1	≤3000	0	0	0
2	3001 – 6000	4(50)	0	4(6.67)
3	6001 – 9000	3(37.5)	0	3(5)
4	9001-12000	0	0	0
5	12001-15000	0	0	0

6	15001-18000	1(12.5)	0	1(1.67)
	Total	8(13.33)	0	8(13.33)

The total respondents in the higher secondary category are just 13.33%.

Table 6.2.13 Number of persons with education up to graduation / above/ other type in a family:

Serial No.	Income category	Total number of families:		Total
		1-2 persons	3-4 persons	
1	≤3000	0	0	0
2	3001 – 6000	0	0	0
3	6001 – 9000	1(3.33)	1(100)	2(3.33)
4	9001-12000	1(3.33)	0	1(1.67)
5	12001-15000	0	0	0
6	15001-18000	1(3.33)	0	1(1.67)
	Total	3(5)	1(1.67)	4(6.67)

The people with graduation are mostly in the income group higher than 6000. So as income increases there is also increase in education of the children.

Table 6.2.14 Number of persons with no education in a family:

Serial No.	Income category	Total number of families:		Total
		1-2 persons	3-4 persons	
1	≤3000	1(6.25)	0	1(1.67)
2	3001 – 6000	10(62.5)	0	10(16.67)
3	6001 – 9000	3(18.75)	0	3(5)
4	9001-12000	0	0	0

5	12001-15000	1(6.25)	0	1(1.67)
6	15001-18000	1(6.25)	0	1(1.67)
	Total	16(26.67)	0	16(26.67)

The number of households having persons with no education is 26.67%. But due to the increase in their income they are trying to give good education to their children.

6.2.2 Housing

Table 6.2.15 Age of house:

Serial No.	Income category	Age of the house				Total
		≤10 years	11-20 years	21-30 years	More than 30 years	
1	≤3000	3(6.67)	0	0	0	3(5)
2	3001 – 6000	31(68.88)	5(41.67)	1(50)	1(100)	38(63.33)
3	6001 – 9000	9(20)	5(41.67)	1(50)	0	15(25)
4	9001-12000	1(2.22)	1(8.33)	0	0	2(3.33)
5	12001-15000	1(2.22)	0	0	0	1(1.67)
6	15001-18000	0	1(8.33)	0	0	1(1.67)
	Total	45(75)	12(20)	2(3.33)	1(1.67)	60(100)

Table 6.2.16 Condition of the house:

Serial No.	Income category	Condition of the house			Total
		Good	livable	dilapidated	
1	≤3000	1(1.88)	2(28.57)	0	3(5)
2	3001 – 6000	36(67.92)	2(28.57)	0	38(63.33)
3	6001 – 9000	12(22.64)	3(42.85)	0	15(25)
4	9001-12000	2(3.77)	0	0	2(3.33)

5	12001-15000	1(1.88)	0	0	1(1.67)
6	15001-18000	1(1.88)	0	0	1(1.67)
	Total	53(88.33)	7(11.67)	0	60(100)

Among the total households surveyed 75% of the respondents have house with an age less than 10 years while 88.33% have houses in good condition. Not a single house surveyed appeared to be in dilapidated condition. So overall housing scenario is satisfactory.

6.2.3 Industry

Table 6.2.17 Type of industries people are engaged in:

Serial No.	Income category	Type of industries:				Total
		Lock industry	Hardware & brassware	Sculpture making	Others	
1	≤3000	1(4.34)	1(3.70)	1(12.5)	0	3(5)
2	3001 – 6000	13(56.52)	19(70.37)	5(62.5)	1(50)	38(63.33)
3	6001 – 9000	8(34.78)	4(14.8)	2(25)	1(50)	15(25)
4	9001-12000	0	2(7.4)	0	0	2(3.33)
5	12001-15000	1(4.34)	0	0	0	1(1.67)
6	15001-18000	0	1(3.70)	0	0	1(1.67)
	Total	23(38.33)	27(45)	8(13.33)	2(3.33)	60(100)

The hardware and brassware industry employs 45% of the workers while 38.33% are engaged in lock industry. The share of hardware industry is more than the lock industry. Sculpture making and other industry employ just 16% of the workers. this indicates that the large chunk of the total industries is covered by the two industries and they need to be considered prominently in any industrial development scheme.

Table 6.2.18 Workers employed in each industry:

Serial No.	Type of industry	Number of workers				Total
		≤5	5-10	10-15	15-20	
1	Lock industry	1(7.1)	14(48.27)	6(54.54)	2(33.33)	23(38.33)
2	Hardware industry	7(50)	12(41.37)	5(45.46)	3(50)	27(45)
3	Sculpture making	5(35.71)	3(10.34)	0	0	8(13.33)
4	Others	1(7.14)	0	0	1(16.67)	2(3.33)
	Total	14(23.33)	29(48.33)	11(18.33)	6(10)	60(100)

Majority of the industries have less than 10 workers. The hardware industry employs 45% of the respondents while the lock industry employs 38.33% of the respondents.

Table 6.2.19 Turnover of the industry:

Serial No.	Income category	Turnover of the industry in lakhs:					Total
		0-5lakh	6-10	11-15	16-20	More than 20 lakhs	
1	Lock industry	1(33.33)	5(20)	9(46.25)	7(53.84)	1(33.33)	23(38.33)
2	Hardware industry	2(66.67)	11(44)	7(43.75)	5(38.46)	2(6.67)	27(45)
3	Sculpture making	0	8(32)	0	0	0	8(13.33)
4	Others	0	1(4)	0	1(7.7)	0	2(3.33)
	Total	3(5)	25(41.67)	16(26.67)	13(21.67)	3(5)	60(100)

The household survey indicates that 41.67% of the industries have a turnover of 6-10 lakhs. Only 5% have a turnover of less than 5 lakhs. The number of industries with a turnover of more than 16 lakhs is a little more than 25%.

Table 6.2.20 Net profit of the industry:

Serial No.	Income category	Net profit of the industry in lakhs:					Total
		1-2.5	2.5-5	5-7.5	7.5-10	More than 10 lakhs	
1	Lock industry	5(35.71)	9(30)	8(61.53)	1(50)	0	23(38.33)
2	Hardware industry	3(21.42)	18(60)	4(30.77)	1(50)	1(100)	27(45)
3	Sculpture making	6(41.84)	2(6.67)	0	0	0	8(13.33)
4	Others	0	1(3.33)	1(7.7)	0	0	2(3.33)
	Total	14(23.33)	30(50)	13(21.67)	2(3.33)	1(1.67)	60(100)

The majority of the industries had net profit less than 5 lakhs. Around 21.67% have a profit between 5-7.5 lakhs and only 5% had a profit more than 10 lakhs.

Table 6.2.21 Raw materials used in the industry:

Serial No.	Income category	Raw materials:				
		Iron sheets	Iron rods	Iron scrap	Mud, ash and clay	Chemical & other mat.
1	Lock industry	5(45.45)	4(57.14)	23(46)	0	10(31.25)
2	Hardware industry	6(54.54)	3(42.86)	27(54)	15(65.21)	12(37.5)
3	Sculpture making	0	0	0	8(34.78)	8(25)
4	Others	0	0	0	0	2(6.25)
	Total	11(18.33)	7(11.67)	50(83.33)	23(38.33)	32(53.33)

The table shows that small number of industries use fresh metal sheets (18.33%) and metal rods (11.67%) for manufacturing. Majority (83.33%) use scrap iron for production. The use of chemicals is in 53.33% of the industries.

Table 6.2.22 Bye product from the industry:

Serial No.	Income category	Bye product from the industry:			
		Iron scrap	Iron dust	Mud, ash and clay	Chemical & other mat.
1	Lock industry	23(46)	23(46)	0	10()
2	Hardware industry	27(54)	27(54)	15(65.21)	12()
3	Sculpture making	0	0	8(34.78)	8()
4	Others	0	0	0	2()
	Total	50(83.33)	50(83.33)	23(38.33)	32(53.33)

Scrap iron and iron dust is produced as a bye product in 83.33% of the industries. It is recycled and reused and only a small percentage of this goes to waste. Mud and clay produced as a bye product in the sculpture making industry is also recycled for the most part. Chemicals and other materials coming out of the industries are a waste and are currently just released in the drains or dumped with the normal waste.

Table 6.2.23 Sources of energy in the industry:

Serial No.	Income category	Sources of energy:		
		Coal	Electricity	Generator/Diesel
1	Lock industry	0	23(38.33)	8(36.36)
2	Hardware industry	19(67.85)	27(45)	11(50)
3	Sculpture making	8(28.57)	8(13.33)	1(4.55))
4	Others	1(3.57)	2(3.33)	2(9.09)
	Total	28(46.67)	60(100)	22(36.67)

All the industries use electricity as a source of energy for running the machines as well as the domestic appliances. Coal is used as a source of energy in 46.67% of the industries mostly for the processes of moulding and smelting.

Table 6.2.24 Pollutants released from the industries:

Serial No.	Income category	Pollutants released from the industries:			
		Air pollutant	Water pollutant	Land pollutant	Noise pollutant
1	Lock industry	16(35.55)	10(31.25)	10(27.02)	17(40.47)
2	Hardware industry	19(42.22)	12(37.5)	17(45.94)	21(50)
3	Sculpture making	8(17.77)	8(25)	8(21.62)	2(4.76)
4	Others	2(4.44)	2(6.25)	2(5.40)	2(4.76)
	Total	45(75)	32(53.33)	37(61.67)	42(70)

Air pollution is caused by 75% of the industries. Water pollution is caused by 53.33% of the industries while 61.67% of the industries cause land pollution. Noise pollution is also caused by 70% of the industries. Although the pollutant emission level by each industry is low but the sheer concentration of these industries in a small area leads to harmful effects.

Table 6.2.25 Source of supply of raw materials for the industries:

Serial No.	Type of industry	Source of supply of raw materials:				Total
		Mumbai	Faridabad	Meerut	Other	
1	Lock industry	4(57.14)	11(31.42)	8(53.33)	0	23(38.33)
2	Hardware industry	3(42.85)	17(48.57)	7(46.67)	0	27(45)
3	Sculpture making	0	6(17.14)	0	2(66.67)	8(13.33)
4	Others	0	1(2.85)	0	1(33.33)	2(3.33)
	Total	7(11.67)	35(58.33)	15(25)	3(5)	60(100)

The above table shows Faridabad as the major (58.33%) supplier of raw materials followed by Meerut which accounts for 25% of the raw material supply for industries. Mumbai supplies raw material to 11.67% of the industries. The share of Mumbai has gone down due to the development of industries in Faridabad and Gaziabad. The raw material is in the form of scrap iron from the large industries.

Table 6.2.26 Supply of finished products:

Serial No.	Type of industry	Source of supply of raw materials:				
		Mumbai	Delhi	Calcutta	Bangalore	Others
1	Lock industry	13	20	19	15	17
2	Hardware industry	18	21	23	19	25
3	Sculpture making	0	2	0	0	6
4	Others	0	2	0	0	2
	Total	31(51.67)	45(75)	42(70)	34(56.67)	50(83.33)

The above table indicates that apart from the major cities of India the finished products from the industries are supplied all over the country.

6.2.4 Physical infrastructure

3.1 Transportation

Table 6.2.27 Maintenance of the road:

Serial No.	Income category	Maintenance of the roads:			Total
		Good	Bad	Worse	
1	≤3000	0	0	3(13.04)	3(5)
2	3001 – 6000	17(60.71)	5(55.55)	16(69.56)	38(63.33)
3	6001 – 9000	9(32.14)	3(33.33)	3(13.04)	15(25)
4	9001-12000	0	1(11.11)	1(4.34)	2(3.33)

5	12001-15000	1(3.57)	0	0	1(1.67)
6	15001-18000	1(3.57)	0	0	1(1.67)
	Total	28(46.67)	9(15)	23(38.33)	60(100)

Out of the total surveyed households 46.67% claimed the road maintenance was good because they had newly constructed concrete road. 38.335 claimed the road maintenance was bad as the road in their area was more than 5 years old and not maintained ever since.

Table 6.2.28 Vehicles owned:

Serial No.	Income category	Total number of families:			Total
		Cycle	2-wheeler	Both	
1	≤3000	3(6.52)	0	0	3(5)
2	3001 – 6000	37(80.43)	1(10)	0	38(63.33)
3	6001 – 9000	6(13.04)	9(90)	0	15(25)
4	9001-12000	0	0	2(50)	2(3.33)
5	12001-15000	0	0	1(250)	1(1.67)
6	15001-18000	0	0	1(25)	1(1.67)
	Total	46(76.67)	10(16.67)	4(6.67)	60(100)

Majority of the surveyed group had a cycle. 16.67% had 2-wheeler. While the higher income group with more than 9000 owned 4-wheeler.

3.2 Water supply

Table 6.2.29 Sources of water supply:

Serial No.	Income category	Sources of water supply:		
		Public	Own source	Both
1	≤3000	3(10.34)	0	0
2	3001 – 6000	21(72.41)	11(50)	6(66.67)
3	6001 – 9000	5(17.24)	7(31.81)	3(33.33)
4	9001-12000	0	2(9.09)	0
5	12001-15000	0	1(4.54)	0
6	15001-18000	0	1(4.54)	0
	Total	29(48.33)	22(36.67)	9(15)

Almost half of the respondents have access to public source of water supply 36.67 respondents have access to own source of water supply while 15% have both the sources. Employing jet pumps to draw ground water is a common practice in Aligarh. This has caused some water supply problems in recent times.

4.3 Electricity

Table 6.2.30 Hours of availability:

Serial No.	Income category	Hours of availability:			Total
		15-16	17-18	More than 16	
1	≤3000	3(10)	0	0	3(5)
2	3001 – 6000	21(70)	17(56.67)	0	38(63.33)
3	6001 – 9000	6(20)	9((30)	0	15(25)
4	9001-12000	0	2(6.66)	0	2(3.33)
5	12001-15000	0	1(3.33)	0	1(1.67)

6	15001-18000	0	1(3.33)	0	1(1.67)
	Total	30(50)	30(50)	0	60(100)

The availability of electricity is 12-14 hours and 14-16 hours to each half of the respondents. This power cut for 8-10 hours takes a toll on the production of the industries and increases the cost of production.

4.4 DRAINAGE AND SEWERAGE

Table 6.2.31 Type of sewerage:

Serial No.	Income category	Type of sewerage::			Total
		Septic tank	Sewer	No facility	
1	≤3000	0	0	3(37.5)	3(5)
2	3001 – 6000	32(66.67)	2(50)	4(50)	38(63.33)
3	6001 – 9000	12(25)	2(50)	1(12.5)	15(25)
4	9001-12000	2(4.16)	0	0	2(3.33)
5	12001-15000	1(2.08)	0	0	1(1.67)
6	15001-18000	1(2.08)	0	0	1(1.67)
	Total	48(80)	4(6.67)	8(13.33)	60(100)

The respondents having septic tank in their houses account for 80% of the group as they do not have access to sewers in their areas. The households with no facility at all account for 13.33%.

Table 6.2.32 Condition of drains:

Serial No.	Income category	Condition of drains:			Total
		Open	Covered	No drains	
1	≤3000	3(50)	0	0	3(5)
2	3001 – 6000	38(63.33)	0	0	38(63.33)

3	6001 – 9000	15(25)	0	0	15(25)
4	9001-12000	2(3.33)	0	0	2(3.33)
5	12001-15000	1(1.67)	0	0	1(1.67)
6	15001-18000	1(1.67)	0	0	1(1.67)
	Total	60	0	0	60(100)

All the respondents have open drains in their areas. Close drains are not a norm. Open drains are constructed everywhere.

Table 6.2.33 Problems of drainage:

Serial No.	Income category	Problems of drainage:		
		Overflow	Clogging	Bad odour
1	≤3000	3(50)	3(50)	3(6.12)
2	3001 – 6000	38(63.33)	38(63.33)	32(65.30)
3	6001 – 9000	15(25)	15(25)	13(26.53)
4	9001-12000	2(3.33)	2(3.33)	1(2.04)
5	12001-15000	1(1.67)	1(1.67)	0
6	15001-18000	1(1.67)	1(1.67)	0
	Total	60(100)	60(100)	49(81.67)

All the respondents have the problem of coggng of the drains and overflow resulting from clogging and during rain. Most of the respondents have the problem of bad odour in their drains. This is very unhygienic and is the cause of mosquitoes and cases of malaria and typhoid. The upper income group does not have the problem of bad odour as they can to afford to get their drains cleaned regularly.

4.5 Solid waste disposal:

Table 6.2.34 Method of collection at house:

Serial No.	Income category	Method of collection at house			Total
		Dust bin	Burning	Throwing out	
1	≤3000	0	1(16.67)	2(4.08)	3(5)
2	3001 – 6000	0	5(83.33)	33(67.34)	38(63.33)
3	6001 – 9000	1(20)	0	14(28.57)	15(25)
4	9001-12000	2(40)	0	0	2(3.33)
5	12001-15000	1(20)	0	0	1(1.67)
6	15001-18000	1(20)	0	0	1(1.67)
	Total	5(8.33)	6(10)	49(81.67)	60(100)

The method of collection of solid waste at the houses is predominantly throwing out. Only 8.33% have access to dust bin. These are in the higher income group above 9000.

Table 6.2.35 Frequency of collection:

Serial No.	Income category	Frequency of collection:				Total
		Everyday	3 days	Weekly	Never	
1	≤3000	0	0	0	3(37.5)	3(5)
2	3001 – 6000	0	0	33(71.73)	5(62.5)	38(63.33)
3	6001 – 9000	1(20)	1(100)	13(28.26)	0	15(25)
4	9001-12000	2(40)	0	0	0	2(3.33)
5	12001-15000	1(20)	0	0	0	1(1.67)
6	15001-18000	1(20)	0	0	0	1(1.67)
	Total	5(8.33)	1(1.67)	46(76.67)	8(13.33)	60(100)

Table 6.2.36 Agency for collection:

Serial No.	Income category	Agency for collection:			Total
		Nagar nigram	Private agency	No collection	
1	≤3000	0	0	3(37.5)	3(5)
2	3001 – 6000	31(65.95)	2(40)	5(62.5)	38(63.33)
3	6001 – 9000	12(25.53)	3(60)	0	15(25)
4	9001-12000	2(4.24)	0	0	2(3.33)
5	12001-15000	1(2.12)	0	0	1(1.67)
6	15001-18000	1(2.12)	0	0	1(1.67)
	Total	47(83.33)	5(8.33)	8(13.33)	60(100)

The majority of the collection of solid waste is weekly and that too by the nagar nigram. A small number (13.33%) of the respondents do not have any facility for waste collection at all. They just throw it out nearby their house.

6.2.5 Environmental characteristics:

Table 6.2.37 Water quality:

Serial No.	Income category	Water quality			Total
		Very good	Good	Moderate	
1	≤3000	0	1	2	3(5)
2	3001 – 6000	0	13	25	38(63.33)
3	6001 – 9000	2	10	3	15(25)
4	9001-12000	0	1	1	2(3.33)
5	12001-15000	0	1	0	1(1.67)
6	15001-18000	0	1	0	1(1.67)

	Total	2	27(45)	31(51.67)	60(100)

The air quality is claimed to be good and moderate by 96.67 respondents.

So the water situation is good.

Table 6.38 Air quality:

Serial No.	Income category	Air quality:				Total
		Very good	Good	Moderate	Poor	
1	≤3000	0	1(2.7)	2(9.52)	0	3(5)
2	3001 – 6000	0	24(64.86)	13(61.9)	1(100)	38(63.33)
3	6001 – 9000	1(100)	9(24.32)	5(23.8)	0	15(25)
4	9001-12000	0	1(2.7)	1(4.76)	0	2(3.33)
5	12001-15000	0	1(2.7)	0	0	1(1.67)
6	15001-18000	0	1(2.7)	0	0	1(1.67)
	Total	1(1.67)	37(61.67)	21(35)	1(1.67)	60(100)

Only 1.67% people rate the air quality in their area to be very good. 61.67% of the respondents rate the air quality to be good. These people reside in an area which is completely residential. Most of them have moved out of their previous residences due to poor air quality.

Table 6.39 Land quality:

Serial No.	Income category	Land quality:				Total
		Very good	Good	Moderate	Poor	
1	≤3000	0	1(8.33)	2(5.88)	0	3(5)
2	3001 – 6000	0	5(41.67)	25(73.52)	8(61.53)	38(63.33)
3	6001 – 9000	1(100)	6(50)	3(8.82)	5(38.47)	15(25)

4	9001-12000	0	0	2(5.88)	0	2(3.33)
5	12001-15000	0	0	1(2.94)	0	1(1.67)
6	15001-18000	0	0	1(2.94)	0	1(1.67)
	Total	1(1.67)	12(20)	34(57.33)	13(21.67)	60(100)

The land quality is poor in 21.67% of the households. This occurs due to intense urbanisation and the waste of the industries that is dumped on the bare ground without any treatment. Most (60%) of the respondents claim that the land quality in the area is moderate. It is because these areas are generally on new lands where there is not intense industrial effect.

Table 6.40 Noise pollution:

Serial No.	Income category	Noise pollution:				Total
		Very high	High	Moderate	Low	
1	≤3000	0	1(6.67)	2(5.26)	0	3(5)
2	3001 – 6000	4(66.66)	9(60)	25(65.78)	0	38(63.33)
3	6001 – 9000	2(33.33)	5(33.33)	8(21.05)	0	15(25)
4	9001-12000	0	0	2(5.26)	0	2(3.33)
5	12001-15000	0	0	1(2.63)	0	1(1.67)
6	15001-18000	0	0	0	1(100)	1(1.67)
	Total	6(10)	15(25)	38(63.33)	1(1.67)	60(100)

Very high noise pollution is experienced by 10% people in their areas. These are the localities situated in the core of the old city. One fourth people suffer from high noise pollution. These people are either situated on some busy road or have industries in their houses. The majority of the respondents suffer from moderate noise pollution. The reason is that their living places are generally on the outskirts of the city.

Table 6.41 Quality of life:

Serial No.	Income category	Quality of life:				Total
		Very good	Good	Moderate	Poor	
1	≤3000	0	0	3	0	3(5)
2	3001 – 6000	0	3(30)	31(68.88)	4(80)	38(63.33)
3	6001 – 9000	0	5(50)	9(20)	1(20)	15(25)
4	9001-12000	0	0	2	0	2(3.33)
5	12001-15000	0	1(10)	0	0	1(1.67)
6	15001-18000	0	1(10)	0	0	1(1.67)
	Total	0	10(16.67)	45(75)	5(8.33)	60(100)

Out of the total house holds 75% people rate their life as moderate. None claim their life to be very good. While only 16.67% rate their life as good. 8.33% rate their life as poor.

6.3 ANALYSIS FOR THE INDUSTRY OWNERS

1. Demographic characteristics

Table 6.3.1 Total number of persons in a family:

Serial No.	Income category	Total number of persons in a family:			Total
		1-3	4-6	More than 6	
1	≤10000	1(100)	6(15.38)	0	7(17.5)
2	10000 – 15000	0	9(23.07)	0	9(22.5)
3	15001 – 20000	0	5(12.82)	0	5(12.5)
4	20001-25000	0	5(12.82)	0	5(12.5)

5	25000-30000	0	4(10.25)	0	4(10)
6	3000-35000	0	4(10.25)	0	4(10)
7	35001-40000	0	3(7.7)	0	3(7.5)
8	More than 40000	0	3(7.7)	0	3(7.5)
	Total	1(2.5)	39(97.5)	0	40(100)

97.5% of the respondents have family size of 4-6 members. Only one of the respondents had a family size less than 4. It was a young couple recently married. So this indicates that the trend in Aligarh city among the industry owners is to go for nuclear family. As soon as someone gets self dependent and starts earning his own income he is married off and leaves his parents house to start his own individual household.

Table 6.3.2 Total number of males in a family:

All the respondents have just 1-3 males in their family.

Serial No.	Income category	Total number of families:			Total
		1-3	4-6	More than 6	
1	≤10000	7(17.5)	0	0	7(17.5)
2	10001 – 15000	9(22.5)	0	0	9(22.5)
3	15001 – 20000	5(12.5)	0	0	5(12.5)
4	20001-25000	4(10)	0	0	5(12.5)
5	25000-30000	4(10)	0	0	4(10)
6	30001-35000	4(10)	0	0	4(10)
7	35001-40000	3(7.5)	0	0	3(7.5)
8	More than 40000	3(7.5)	0	0	3(7.5)
	Total	40(100)	0	0	40(100)

Table 6.3.3 Total number of females in a family:

Serial No.	Income category	Total number of families:			Total
		1-3	4-6	More than 6	
1	≤10000	7(18.42)	0	0	7(17.5)
2	10001 – 15000	9(23.68)	0	0	9(22.5)
3	15001 – 20000	5(13.15)	0	0	5(12.5)
4	20001-25000	5(13.15)	0	0	5(12.5)
5	25001-30000	4(10.52)	0	0	4(10)
6	30001-35000	2(5.26)	2(100)	0	4(10)
7	35001-40000	3(7.89)	0	0	3(7.5)
8	More than 40000	3(7.89)	0	0	3(7.5)
	Total	38(95)	2(5)	0	40(100)

Just 2 of the respondent families have female number between 4-6. This is a healthy trend as no family has more than 3 males. This indicates that the society has acceptance to female child.

Table 6.3.4 Total expenditure in various income groups:

Serial No.	Income category	Total number of families:				Total
		≤5000	5001-10000	10001-15000	15001-20000	
1	≤10000	5(62.5)	2(13.33)	0	0	7(17.5)
2	10001 – 15000	3(37.5)	6(40)	0	0	9(22.5)
3	15001 – 20000	0	3(20)	2(15.4)	0	5(12.5)
4	20001-25000	0	2(13.33)	3(23.07)	0	5(12.5)

5	25001-30000	0	0	4(30.8)	0	4(10)
6	30001-35000	0	2(13.33)	2(15.4)	0	4(10)
7	35001-40000	0	0	1(7.7)	2(50)	3(7.5)
8	More than 40000	0	0	1(7.7)	2(50)	3(7.5)
	Total	8(20)	15(37.5)	13(32.5)	4(10)	40(100)

The expenditure is highest in the income group of more than 35000 i.e. 15000-2000 per month. The expenditure decides the life style of the household. It also depends on the location of residence and work place. It is largely governed by the size of the family. Again age group of the members of the family decides the expenditure. A house hold with school going kids will have larger expenditure as compared to an aged family.

Table 6.3.5 Total persons in 0-5 age group:

Serial No.	Income category	Total number of families:			Total
		1-2	3-4	More than 4	
1	≤10000	2(18.18)	0	0	2
2	10001 – 15000	5(45.54)	0	0	5
3	15001 – 20000	1(9.09)	0	0	1
4	20001-25000	0	0	0	0
5	25001-30000	0	0	0	0
6	30001-35000	2(18.18)	0	0	2
7	35001-40000	0	0	0	0
8	More than 40000	1(9.09)	0	0	1
	Total	11(27.5)	0	0	11(27.5)

Only 27.5% of the families have members in the age group of 0-5. These families are mostly in the income range below 15000.

Table 6.3.6 Total persons in 6-15 age group:

Serial No.	Income category	Total number of families:			Total
		1-2	3-4	More than 4	
1	≤10000	4(18.18)	2(40)	0	6
2	10001 – 15000	5(22.72)	1(20)	0	6
3	15001 – 20000	2(9.09)	2(40)	0	4
4	20001-25000	2(9.09)	0	0	2
5	25001-30000	4(18.18)	0	0	4
6	30001-35000	1(4.54)	0	0	1
7	35001-40000	2(9.09)	0	0	2
8	More than 40000	2(9.09)	0	0	2
	Total	22(55)	5(12.5)	0	27(67.5)

Most (67.5 %) of the respondents have members in the age group of 6-15. These are school going children and are distributed along all the income groups.

Table 6.3.7 Total persons in 16-30 age group:

Serial No.	Income category	Total number of families:			Total
		1-2	3-4	More than 4	
1	≤10000	3(13.04)	1(20)	0	4
2	10001 – 15000	5(21.73)	0	0	5

3	15001 – 20000	3(13.04)	0	0	3
4	20001-25000	4(17.36)	1(20)	0	5
5	25001-30000	4(17.36)	0	0	4
6	30001-35000	1(4.34)	1(20)	0	2
7	35001-40000	2(8.68)	1(20)	0	3
8	More than 40000	1(4.34)	1(20)	0	2
	Total	23(57.5)	5(12.5)	0	28(70)

Most (70 %) of the families have members in the age group of 16-30. These are college going children and young couples.

Table 6.3.8 Total persons in 31-45 age group:

Serial No.	Income category	Total number of families:			Total
		1-2	3-4	More than 4	
1	≤10000	5(19.23)	0	0	5
2	10001 – 15000	7(26.92)	0	0	7
3	15001 – 20000	4(15.36)	0	0	4
4	20001-25000	3(11.53)	0	0	3
5	25001-30000	2(7.68)	0	0	2
6	30001-35000	1(3.84)	0	0	1
7	35001-40000	2(7.68)	0	0	2
8	More than 40000	2(7.68)	0	0	2
	Total	26(65)	0	0	26(65)

Table 6.3.9 Total persons in 46-60 age group:

Serial No.	Income category	Total number of families:			Total
		1-2	2-4	More than 4	
1	≤10000	1(5.88)	0	0	1
2	10001 – 15000	1(5.88)	0	0	1
3	15001 – 20000	0	0	0	0
4	20001-25000	3(17.64)	0	0	3
5	25001-30000	4(23.52)	0	0	4
6	30001-35000	3(17.64)	0	0	3
7	35001-40000	3(17.64)	0	0	3
8	More than 40000	2(11.76)	0	0	2
	Total	17(42.5)	0	0	17(42.5)

Most (65%) of the families lie in the age group of 30-45. Only 42.5% families have members in the age group of 46-60. This indicates that the family age is middle aged and young.

Table 6.3.10 Number of persons with below or primary education in a family:

Serial No.	Income category	Total number of families:			Total
		1-2	2-4	More than 4	
1	≤10000	6(35.29)	0	0	6
2	10001 – 15000	7(42.17)	0	0	7
3	15001 – 20000	2(11.76)	0	0	2
4	20001-25000	0	0	0	0
5	25001-30000	1(5.88)	0	0	1

6	30001-35000	0	0	0	0
7	35001-40000	0	0	0	0
8	More than 40000	1(5.88)	0	0	1
	Total	17(42.5)	0	0	17(42.5)

Most of the children in the primary classes are from the income range below 20000. Total respondents with children in primary classes are 42.5%.

Table 6.3.11 Number of persons with secondary education in a family:

Serial No.	Income category	Total number of families:			Total
		1-2	2-4	More than 4	
1	≤10000	4(16.67)	1(50)	0	5
2	10001 – 15000	8(33.33)	1(50)	0	9
3	15001 – 20000	1(4.16)	0	0	1
4	20001-25000	4(16.67)	0	0	4
5	25001-30000	3(12.5)	0	0	3
6	30001-35000	1(4.16)	0	0	1
7	35001-40000	1(4.16)	0	0	1
8	More than 40000	2(8.33)	0	0	2
	Total	24(60)	2(5)	0	26(65)

All the respondents in the income range 10000-15000 have their children in the secondary class. The total respondent family with children in secondary class is 65%.

Table 6.3.12 Number of persons with higher secondary education in a family:

Serial No.	Income category	Total number of families:			Total
		1-2	2-4	More than 4	
1	≤10000	3(16.67)	0	0	3
2	10001 – 15000	2(11.11)	0	0	2
3	15001 – 20000	4(22.22)	0	0	4
4	20001-25000	2(11.11)	1(50)	0	3
5	25001-30000	3(16.67)	0	0	3
6	30001-35000	1(5.55)	0	0	1
7	35001-40000	1(5.55)	0	0	1
8	More than 40000	2(11.11)	1(50)	0	3
	Total	18(45)	2(5)	0	20(50)

Half the respondents have children in higher secondary. They are distributed evenly across all the income groups.

Table 6.3.13 Number of persons with education up to graduation / above/ other type in a family:

Serial No.	Income category	Total number of families:			Total
		1-2	2-4	More than 4	
1	≤10000	3(13.63)	0	0	3
2	10001 – 15000	3(13.63)	0	0	3
3	15001 – 20000	3(13.63)	0	0	3

4	20001-25000	3(13.63)	1(25)	0	4
5	25001-30000	4(18.81)	1(25)	0	5
6	30001-35000	2(9.09)	0	0	2
7	35001-40000	2(9.09)	1(25)	0	3
8	More than 40000	2(9.09)	1(25)	0	3
	Total	22(55)	4(10)	0	26(65)

Most (65%) of the households have graduates. While the families in the income range of more than 20000 have graduates numbering 3-4. As the income increases the education of the family members also increases.

Housing

Table 6.3.14 Age of house:

Serial No.	Income category	Total number of persons in a family:				Total
		≤10	11-20	21-30	More than 30	
1	≤10000	3(17.64)	3(23.1)	1(20)	0	7(17.5)
2	10001 – 15000	3(17.64)	2(15.4)	2(40)	1(20)	9(22.5)
3	15001 – 20000	4(23.52)	1(7.7)	1(20)	0	5(12.5)
4	20001-25000	1(5.88)	2(15.4)	0	1(20)	5(12.5)
5	25001-30000	3(17.64)	1(7.7)	0	1(20)	4(10)
6	30001-35000	0	3(23.1)	0	1(20)	4(10)
7	35001-40000	2(11.76)	0	0	1(20)	3(7.5)
8	More than 40000	1(5.88)	1(7.7)	1(20)	0	3(7.5)
	Total	17(42.5)	13(32.5)	5(12.5)	5(12.5)	40(100)

Most (75%) of the respondents have houses below 20 yrs of age. So the housing development is recent. It also shows that people prefer to move out of their ancestral houses and construct their own house.

Table 6.3.15 Condition of the house:

Serial No.	Income category	Good	Livable	Dilapidated	Total
1	≤10000	7(19.44)	0	0	7(17.5)
2	10001 – 15000	9(25)	0	0	9(22.5)
3	15001 – 20000	4(11.11)	1(25)	0	5(12.5)
4	20001-25000	4(11.11)	1(25)	0	5(12.5)
5	25001-30000	4(11.11)	1(25)	0	4(10)
6	30001-35000	4(11.11)	0	0	4(10)
7	35001-40000	2(5.55)	1(25)	0	3(7.5)
8	More than 40000	3(8.33)	0	0	3(7.5)
	Total	36(90)	4(10)	0	40(100)

Most (90%) of the houses are in good condition. They are well kept and taken care of. The housing scenario is good across all the income groups.

INDUSTRY

Table 6.3.16 Type of industries people are engaged in:

Serial No.	Income category	Total number of families:				Total
		Lock industry	Hardware & brassware	Sculpture making	Others	
1	≤10000	4(21.05)	3(18.75)	0	0	7(17.5)

2	10001 – 15000	2(10.52)	5(31.25)	1(50)	1(33.33)	9(22.5)
3	15001 – 20000	1(5.26)	3(18.75)	0	1(33.33)	5(12.5)
4	20001-25000	1(5.26)	2(12.5)	1(50)	1(33.33)	5(12.5)
5	25001-30000	3(15.78)	1(6.25)	0	0	4(10)
6	30001-35000	3(15.78)	1(6.25)	0	0	4(10)
7	35000-40000	2(10.52)	1(6.25)	0	0	3(7.5)
8	More than 40000	3(15.78)	0	0	0	3(7.5)
	Total	19(47.5)	16(40)	2(5)	3(7.5)	40(100)

The total people engaged in hardware and lock industry is 87.5%. So these industries form a large chunk of the cottage and small scale industries in Aligarh city. Others form just 7.5% of the cottage industries.

Table 6.3.18 Number of workers in each industry:

Serial No.	Type of industry	Number of workers					Total
		≤5	5-10	10-15	15-20	More than 20	
1	Lock industry	3(25)	9(50)	4(66.66)	1(50)	2(100)	19(47.5)
2	Hardware industry	7(58.33)	6(33.33)	2(33.33)	1(50)	0	16(40)
3	Sculpture making	1(8.33)	1(5.55)	0	0	0	2(5)
4	Others	1(8.33)	2(11.11)	0	0	0	3(7.5)
	Total	12(30)	18(45)	6(15)	2(5)	2(5)	40(100)

The number of lock industry owners is 47.5%, 42.5% are hardware industry owners while 5% are into sculpture making. Other industries include manufacture of shaving cream, glass making etc. Just 5% of the lock industries have a turnover of more than 20 lakhs.

Table 6.3.19 Turnover of the industry:

Serial No.	Income category	Annual income of the industries in lakhs:					Total
		0-5lakh	6-10	11-15	16-20	More than 20 lakhs	
1	Lock industry	1(33.33)	5(27.77)	5(62.5)	3(50)	5(100)	19(47.5)
2	Hardware industry	2(66.66)	8(44.44)	3(37.5)	3(50)	0	16(40)
3	Sculpture making	0	2	0	0	0	2(5)
4	Others	0	3	0	0	0	3(7.5)
	Total	3(7.5)	18(45)	8(20)	6(15)	5(12.5)	40(100)

The number of industries with a turnover of 6-10 lakhs is 45% while 12.5% of the industries have a turnover more than 20 lakhs. All the industries with turnover more than 20 lakhs are owned by the people in the income range of more than 25000 per month. They are sole owner of the industry or partner in the industry. Most of the industries are owned by a family. So the partners are generally are close kins.

Table 6.3.20 Net profit of the industry:

Serial No.	Income category	Net profit of the industry in lakhs					Total
		1-2.5	2.5-5	5-7.5	7.5-10	More than 10 lakhs	
1	Lock industry	5(35.71)	9(50)	2(40)	2(100)	1(100)	19(47.5)
2	Hardware industry	5(35.71)	8(44.44)	3(60)	0	0	16(40)
3	Sculpture making	2(14.28)	0	0	0	0	2(5)
4	Others	2(14.28)	1(5.55)	0	0	0	3(7.5)
	Total	14(35)	18(45)	5(12.5)	2(5)	1(2.5)	40(100)

The number of industries registering net profit less than 2.5 lakhs is 35% while 45% of industries registers net profit of 2.5-5 lakhs. So 80% of the industries have a net profit of less than 5 lakhs. The industries in the 7.5-10 lakhs is only 5% while just 2.5% industries in the survey sample have a net profit more than 10 lakhs.

Table 6.2.21 Raw materials used in the industry:

Serial No.	Income category	Raw materials:				
		Iron sheets	Iron rods	Iron scrap	Mud, ash and clay	Chemical & other mat.
1	Lock industry	3(42.85)	3(75)	13(46.43)	0	11(45.83)
2	Hardware industry	4(57.15)	1(25)	15(53.57)	11(84.62)	8(33.33)
3	Sculpture making	0	0	0	2(15.38)	2(8.33)
4	Others	0	0	0	0	3(12.5)
	Total	7(17.5)	4(10)	28(70)	13(32.5)	24(60)

The table shows that small number of industries use fresh metal sheets (17.5%) and metal rods (10%) for manufacturing. Majority (70%) use scrap iron for production. The use of chemicals is in 60% of the industries.

Table 6.2.22 Bye product from the industry:

Serial No.	Income category	Bye product from the industry:			
		Iron scrap	Iron dust	Mud, ash and clay	Chemical & other mat.
1	Lock industry	19(54.28)	19(54.28)	0	11(45.83)
2	Hardware industry	16(45.72)	16(45.72)	11(84.62)	8(33.33)
3	Sculpture making	0	0	2(15.38)	2(8.33)
4	Others	0	0	0	3(12.5)
	Total	35(87.5)	35(87.5)	13(32.5)	24(60)

Scrap iron and iron dust is produced as a bye product in 87.5% of the industries. It is recycled and reused and only a small percentage of this goes to waste. Mud and clay produced as a bye product in the sculpture making industry is also recycled for the most part. Chemicals and other materials coming out of the industries are a waste and are currently just released in the drains or dumped with the normal waste.

Table 6.2.23 Sources of energy in the industry:

Serial No.	Income category	Sources of energy:		
		Coal	Electricity	Generator/Diesel
1	Lock industry	0	19(47.5)	11(50)
2	Hardware industry	13(81.25)	16(40)	7(31.81)
3	Sculpture making	2(12.5)	2(5)	2(9.09)
4	Others	1(6.25)	3(7.5)	2(9.09)
	Total	16(40)	40(100)	22(55)

All the industries use electricity as a source of energy for running the machines as well as the domestic appliances. Coal is used as a source of energy in 40% of the industries mostly for the processes of moulding and smelting.

Table 6.2.24 Pollutants released from the industries:

Serial No.	Income category	Pollutants released from the industries:			
		Air pollutant	Water pollutant	Land pollutant	Noise pollutant
1	Lock industry	11(35.55)	11(31.25)	12(27.02)	11(40.47)
2	Hardware industry	7(42.22)	10(37.5)	13(45.94)	11(50)
3	Sculpture making	2(17.77)	2(25)	0	2(4.76)
4	Others	3(4.44)	3(6.25)	0	2(4.76)
	Total	23(57.5)	26(65)	25(62.5)	26(65)

Air pollution is caused by 57.5% of the industries. Water pollution is caused by 65% of the industries while 62.5% of the industries cause land pollution. Noise pollution is also caused by 65% of the industries. Although the pollutant emission level by each industry is low but the sheer concentration of these industries in a small area leads to harmful effects.

Table 6.2.25 Source of supply of raw materials for the industries:

Serial No.	Type of industry	Source of supply of raw materials:				Total
		Mumbai	Faridabad	Meerut	Other	
1	Lock industry	2(57.14)	12(31.42)	5(53.33)	0	19(47.5)
2	Hardware industry	3(42.85)	8(48.57)	5(46.67)	0	16(40)
3	Sculpture making	0	2(17.14)	0	0	2(5)
4	Others	0	2(2.85)	0	1(33.33)	3(7.5)
	Total	5(12.5)	24(60)	10(25)	1(2.5)	40(100)

The above table shows Faridabad as the major (60%) supplier of raw materials followed by Meerut which accounts for 25% of the raw material supply for industries. Mumbai supplies raw material to 12.5% of the industries. The raw material is in the form of scrap iron from the large industries.

Table 6.2.26 Supply of finished products:

Serial No.	Type of industry	Source of supply of raw materials:				
		Mumbai	Delhi	Calcutta	Bangalore	Others
1	Lock industry	7	15	11	10	14
2	Hardware industry	5	13	10	9	12
3	Sculpture making	0	2	0	0	2

4	Others	0	3	0	0	2
	Total	12(30)	33(82.5)	21(52.5)	19(47.5)	30(75)

The above table indicates that apart from the major cities of India the finished products from the industries are supplied all over the country.

6.3.4 Physical infrastructure

Transportation

Table 6.3.27 Maintenance of the road:

Serial No.	Income category	Total number of families:			Total
		Good	Bad	Worse	
1	≤10000	2(33.33)	5(15.15)	0	7(17.5)
2	10001 – 15000	1(16.67)	8(24.24)	0	9(22.5)
3	15001 – 20000	1(16.67)	3(9.09)	1(100)	5(12.5)
4	20001-25000	1(16.67)	4(12.12)	0	5(12.5)
5	25001-30000	0	4(12.12)	0	4(10)
6	30001-35000	1(16.67)	3(9.09)	0	4(10)
7	35001-40000	0	3(9.09)	0	3(7.5)
8	More than 40000	0	3(9.09)	0	3(7.5)
	Total	6(15)	33(82.5)	1(2.5)	40(100)

Majority (85%) of the people claim that the road maintenance in their area is bad. This is also the reason for so many road accidents in the city. People are afraid to take their cars out on roads. They prefer to take rickshaws even when they own their own vehicles.

Table 6.3.28 Vehicles owned:

Serial No.	Income category	Total number of families:		
		Cycle	2-wheeler	4-wheeler
1	≤10000	7(70)	5(13.88)	0
2	10001 – 15000	2(20)	9(25)	1(7.14)
3	15001 – 20000	0	4(11.11)	1(7.14)
4	20001-25000	0	5(13.88)	4(28.57)
5	25001-30000	0	3(8.33)	4(28.57)
6	30001-35000	1(100)	4(11.11)	4(28.57)
7	35001-40000	0	3(8.33)	3(21.42)
8	More than 40000	0	3(8.33)	3(21.42)
	Total	10(25)	36(90)	14 (35)

Around 25% of the respondents own a cycle. These people are mainly in the income category below 15000. Most (90%) of the respondents have a 2-wheeler. Around 35% of the people have a 4-wheeler. Most of the people having a 4-wheeler also have a 2-wheeler as they are easy to maneuver in the narrow crowded lanes of the city.

Table 6.3.29 Water supply:

Serial No.	Income category	Total number of families:			Total
		Public	Own source	Both	
1	≤10000	7(58.33)	0	0	7(17.5)
2	10001 – 15000	2(16.67)	3(15.78)	4(44.44)	9(22.5)
3	15001 – 20000	0	3(15.78)	2(22.22)	5(12.5)
4	20001-25000	3(25)	2(10.52)	0	5(12.5)

5	25001-30000	0	4(21.04)	0	4(10)
6	30001-35000	0	4(21.04)	0	4(10)
7	35001-40000	0	0	3(33.33)	3(7.5)
8	More than 40000	0	3(15.78)	0	3(7.5)
	Total	12(30)	19(47.5)	9(22.5)	40(100)

Around half (47.5%) of the people have their own source of water supply while 30% of the respondents depend on public source of water supply. Out of this a part of the public water supply is from the resident welfare societies. The rest is supplied by the municipal corporation. Respondents having two sources i.e. their own source as well as public water supply are 22.5%. Private motor and pumps are used to draw ground water which has depleted the ground water table. Some areas of the city are now experiencing water supply problems in the summers.

Table 6.3.30 Electricity:

Serial No.	Income category	Total number of families:			Total
		15-16	17-18	More than 18	
1	≤10000	6(25)	1(6.25)	0	7(17.5)
2	10001 – 15000	6(25)	3(18.75)	0	9(22.5)
3	15001 – 20000	1(4.16)	4(25)	0	5(12.5)
4	20001-25000	3(12.5)	2(12.5)	0	5(12.5)
5	25001-30000	3(12.5)	1(6.25)	0	4(10)
6	30001-35000	3(12.5)	1(6.25)	0	4(10)
7	35001-40000	1(4.16)	2(12.5)	0	3(7.5)

8	More than 40000	1(4.16)	2(12.5)	0	3(7.5)
	Total	24(60)	16(40)	0	40(100)

Majority (60%) of the respondents have 14 hours of electric power supply while 40% have 16 hours supply. As a result almost every house has power back up. Inverters and generators have become a necessity of life. The worst affected are the industry owners and workers. They have to schedule their work timings according to the power supply schedule.

DRAINAGE AND SEWERAGE

Table 6.3.31 Type of sewerage:

Serial No.	Income category	Total number of families:			Total
		Septic tank	Sewer	No facility	
1	≤10000	5(18.51)	2(15.38)	0	7(17.5)
2	10001 – 15000	5(18.51)	4(30.76)	0	9(22.5)
3	15001 – 20000	3(11.11)	2(15.38)	0	5(12.5)
4	20001-25000	3(11.11)	2(15.38)	0	5(12.5)
5	25001-30000	2(7.40)	2(15.38)	0	4(10)
6	30001-35000	3(11.11)	1(7.69)	0	4(10)
7	35001-40000	3(11.11)	0	0	3(7.5)
8	More than 40000	3(11.11)	0	0	3(7.5)
	Total	27(67.5)	13(32.5)	0	40(100)

Majority (67.5%) of the respondents have septic tanks in their houses while 32.5% have sewers. All these sewers lead to an open sewer or nallah. The open sewers are a common

site in Aligarh city. The reason stated is the improper slope of the city. The sewers are kept open to let the water dry up by evaporation. So in times of heavy rainfall the sewers overflow along with the drains and the whole city is a mess. Even in the posh localities like medical road and Sir Syednagar a little rain can play spoilsports

Table 6.3.32 Condition of drains:

Serial No.	Income category	Total number of families:			Total
		Open	Covered	No drains	
1	≤10000	6(19.35)	1(11.11)	0	7(17.5)
2	10001 – 15000	9(29.02)	0	0	9(22.5)
3	15001 – 20000	5(16.12)	0	0	5(12.5)
4	20001-25000	2(6.45)	3(33.33)	0	5(12.5)
5	25001-30000	2(6.45)	2(22.22)	0	4(10)
6	30001-35000	3(9.67)	1(11.11)	0	4(10)
7	35001-40000	2(6.45)	1(11.11)	0	3(7.5)
8	More than 40000	2(6.45)	1(11.11)	0	3(7.5)
	Total	31(77.5)	9(22.5)	0	40(100)

Most (77.5%) of the respondents have open drains while 22.5% have covered drains. These covered drains ultimately fall into an open nallah nearby. The open drains are a cause of multiple health related problems.

Table 6.3.33 Problems of drainage:

Serial No.	Income category	Total number of families:			Total
		Overflow	Clogging	Bad odour	
1	≤10000	7(17.5)	7(17.5)	6(24)	7(17.5)
2	10001 – 15000	9(22.5)	9(22.5)	6(24)	9(22.5)

3	15001 – 20000	5(12.5)	5(12.5)	4(16)	5(12.5)
4	20001-25000	5(12.5)	5(12.5)	3(12)	5(12.5)
5	25001-30000	4(10)	4(10)	1(4)	4(10)
6	30001-35000	4(10)	4(10)	2(8)	4(10)
7	35001-40000	3(7.5)	3(7.5)	1(4)	3(7.5)
8	More than 40000	3(7.5)	3(7.5)	2(8)	3(7.5)
	Total	40(100)	40(100)	25(62.5)	40(100)

All the respondents have the problem of clogging of the drains and overflow resulting from clogging and during rain while 62.5% of the respondents have the problem of bad odour in their drains. This is very unhygienic and is the cause of mosquitoes and cases of malaria and typhoid. The upper area does not have the problem of bad odour because the industrial waste water in the drains keeps down the stench and also kill the mosquitoes. Hence the problem of mosquitoes is not found in the upper kot area. But the industrial waste water flowing in the drains is spoiling the ground water table in the area.

WASTE DISPOSAL:

Table 6.3.34 Method of collection at house:

Serial No.	Income category	Total number of families:			Total
		Dust bin	Burning	Throwing out	
1	≤10000	1(3.84)	0	6(42.85)	7(17.5)
2	10001 – 15000	2(7.69)	0	7(50)	9(22.5)
3	15001 – 20000	4(15.38)	0	1(7.14)	5(12.5)
4	20001-25000	5(19.2)	0	0	5(12.5)
5	25001-30000	4(15.38)	0	0	4(10)
6	30001-35000	4(15.38)	0	0	4(10)

7	35001-40000	3(11.53)	0	0	3(7.5)
8	More than 40000	3(11.53)	0	0	3(7.5)
	Total	26(65)	0	14(35)	40(100)

Majority (65%) of the respondents dispose of the garbage by keeping it in the dustbins just outside their houses. From there it is collected by some private agency. Around 35% of the respondents just throw out their garbage on the roadside from there it is collected by the Nagar nigam trucks once every week.

Table 6.3.35 Frequency of collection:

Serial No.	Income category	Total number of families:				Total
		Everyday (%)	3 days(%)	Weekly (%)	Never(%)	
1	≤10000	2(8.33)	0	5(35.71)	0	7(17.5)
2	10001 – 15000	0	2(100)	7(50)	0	9(22.5)
3	15001 – 20000	3(12.5)	0	2(14.28)	0	5(12.5)
4	20001-25000	5(20.83)	0	0	0	5(12.5)
5	25001-30000	4(16.67)	0	0	0	4(10)
6	30001-35000	4(16.67)	0	0	0	4(10)
7	35001-40000	3(12.5)	0	0	0	3(7.5)
8	More than 40000	3(12.5)	0	0	0	3(7.5)
	Total	24(60)	2(5)	14(35)	0	40(100)

The garbage is collected daily in 60% of the households. 35% of the households have the garbage collected weekly. Weekly collection of the garbage collection occurs where the storage container is nearby and people dump the garbage directly in them. The garbage

lies there for a week and stinks. It gets spread on the road by the cows and bulls and create a mess.

Table 6.3.36 Agency for collection:

Serial No.	Income category	Total number of families:			Total
		Nagar nigam(%)	Private agency(%)	No collection(%)	
1	≤10000	5(22.72)	2(11.11)	0	7(17.5)
2	10001 – 15000	9(40.1)	0	0	9(22.5)
3	15001 – 20000	2(9.1)	3(16.67)	0	5(12.5)
4	20001-25000	2(9.1)	3(16.67)	0	5(12.5)
5	25001-30000	2(9.1)	2(11.11)	0	4(10)
6	30001-35000	2(9.1)	2(11.11)	0	4(10)
7	35001-40000	0	3(16.67)	0	3(7.5)
8	More than 40000	0	3(16.67)	0	3(7.5)
	Total	22(55)	18(45)	0	40(100)

Majority (55%) of the total collection in the city is done by the Nagar nigam while 45% is done by the private agencies. The private agencies usually collect the garbage from the houses and dump it in the municipal storage containers kept at the street corners. Since the distance of the storage containers is very far away private agencies have to be employed to carry the garbage from the houses. These agencies are in the form of residential welfare societies or an individual garbage collector.

6.3.5 Environmental characteristics:

Table 6.3.37 Water quality:

Serial No.	Income category	Total number of families:				Total
		Very good(%)	Good (%)	Moderate (%)	Poor (%)	
1	≤10000	0	3(18.75)	2(22.22)	2(33.33)	7(17.5)
2	10001 – 15000	0	2(12.5)	5(55.55)	2(33.33)	9(22.5)
3	15001 – 20000	3(33.33)	1(6.25)	0	1(16.67)	5(12.5)
4	20001-25000	0	3(18.75)	2(22.22)	0	5(12.5)
5	25001-30000	1(11.11)	2(12.5)	0	1(16.67)	4(10)
6	30001-35000	2(22.22)	2(12.5)	0	0	4(10)
7	35001-40000	1(11.11)	2(12.5)	0	0	3(7.5)
8	More than 40000	2(22.22)	1(6.25)	0	0	3(7.5)
	Total	9(22.5)	16(40)	9(22.5)	6(15)	40(100)

The water is claimed to be of very good quality by 22.5% of the group. These people use filter/aquaguard/zero-b at their homes while 40% of the respondents claim the water quality to be good. Only 22.5% rate the water quality as moderate and 15% as poor. The overall water quality of Aligarh is satisfactory.

Table 6.3.38 Air quality:

Serial No.	Income category	Total number of families:				Total
		Very good(%)	Good (%)	Moderate (%)	Poor (%)	
1	≤10000	0	2(15.38)	2(20)	3(20)	7(17.5)
2	10001 – 15000	0	1(7.7)	1(10)	7(46.67)	9(22.5)

3	15001 – 20000	1(50)	2(15.38)	1(10)	1(6.67)	5(12.5)
4	20001-25000	0	2(15.38)	1(10)	2(13.33)	5(12.5)
5	25001-30000	0	1(7.7)	2(20)	1(6.67)	4(10)
6	30001-35000	0	1(7.7)	3(30)	0	4(10)
7	35001-40000	0	2(15.38)	0	1(6.67)	3(7.5)
8	More than 40000	1(50)	2(15.38)	0	0	3(7.5)
	Total	2(5)	13(32.5)	10(25)	15(37.5)	40(100)

Only 5% people rate the air quality in their areas to be very good. 32.5% of the respondents rate the air quality to be good. These people reside in areas which are completely residential. Most of them have moved out of their previous residences due to poor air quality.

Table 6.3.39 Land quality:

Serial No.	Income category	Total number of families:				Total
		Very good(%)	Good (%)	Moderate (%)	Poor (%)	
1	≤10000	0	1(16.67)	1(6.67)	5(26.31)	7(17.5)
2	10001 – 15000	0	0	2(13.33)	7(36.84)	9(22.5)
3	15001 – 20000	0	1(16.67)	3(20)	1(5.26)	5(12.5)
4	20001-25000	0	0	4(26.67)	1(5.26)	5(12.5)
5	25001-30000	0	1(16.67)	2(13.33)	1(5.26)	4(10)
6	30001-35000	0	1(16.67)	0	3(15.78)	4(10)
7	35001-40000	0	1(16.67)	1(6.67)	1(5.26)	3(7.5)
8	More than 40000	0	1(16.67)	2(13.33)	0	3(7.5)

	Total	0	6(15)	15(37.5)	19(47.5)	40(100)

Almost half (47.5%) people claim the land quality in their area is poor. This occurs due to intense urbanisation and the waste of the industries that is dumped on the bare ground without any treatment.

Table 6.3.40 Noise pollution:

Serial No.	Income category	Total number of families:				Total
		Very good(%)	Good (%)	Moderate (%)	Poor (%)	
1	≤10000	2(40)	4(21.05)	0	1(11.11)	7(17.5)
2	10001 – 15000	1(20)	7(36.84)	1(14.28)	0	9(22.5)
3	15001 – 20000	1(20)	0	3(42.86)	1(11.11)	5(12.5)
4	20001-25000	0	3(15.79)	2(28.56)	0	5(12.5)
5	25001-30000	1(20)	2(10.55)	0	1(11.11)	4(10)
6	30001-35000	0	2(10.55)	1(14.28)	1(11.11)	4(10)
7	35001-40000	0	1(5.26)	0	2(22.22)	3(7.5)
8	More than 40000	0	0	0	3(33.33)	3(7.5)
	Total	5(12.5)	19(47.5)	7(17.5)	9(22.5)	40(100)

People experiencing high noise pollution in their areas is 12.5%. These are the localities situated in the core of the old city. Around 47.5% people suffer from high noise pollution. These people are either situated on some busy road or have industries in their houses. All the industries have their own generators and their use leads to very high noise pollution. Generators apart from the heavy machineries are a source of noise pollution in the city.

Table 6.3.41 Quality of life:

Serial No.	Income category	Total number of families:				Total
		Very good(%)	Good (%)	Moderate (%)	Poor (%)	
1	≤10000	0	1(5)	5(33.33)	1(33.33)	7(17.5)
2	10001 – 15000	0	1(5)	7(46.67)	1(33.33)	9(22.5)
3	15001 – 20000	1(50)	3(15)	0	1(33.33)	5(12.5)
4	20001-25000	0	3(15)	2(13.33)	0	5(12.5)
5	25001-30000	0	3(15)	1(6.67)	0	4(10)
6	30001-35000	0	4(20)	0	0	4(10)
7	35001-40000	1(50)	2(10)	0	0	3(7.5)
8	More than 40000	0	3(15)	0	0	3(7.5)
	Total	2(5)	20(50)	15(37.5)	3(7.5)	40(100)

Only 5% people in the entire survey group of industry owner rate their life as very good. Half of the total groups rate their life as good. While only 7.5% rate their life as poor.

INFERENCES

The inferences drawn from the household survey are as follows:

- The household survey indicates that the joint family system is breaking up and nuclear families are coming up. This not only leads to creation of new households but is also followed by setting up of new industry among the industry owners.
- The increase in demand of land is two folds in case of industry owners. One is the demand of house and the other is the place for setting up the industry.

- The age group survey indicates that the average group of earning members of the family is between 31-45 years. The industrial labourers turn into industry owner by the time they cross the age of 45 years.
- The young entrepreneurs are the ones who had family business or are partner in their family industry.
- The education among the industrial labourers is generally upto secondary school. The number of dropouts after secondary school is very high. A very few of the children of industrial labourers go for higher education. The reason for this high rate of drop out is for the most cases poor economic condition of the family and in some cases the temptation to earn money at a young age.
- The industry owners are shifting away from their ancestral homes in the old city to the civil lines area to avail better education to their children. But still they go for commerce and arts studies as they want to get involved in their family business in the near future.
- As evident from the analysis the housing condition in Aligarh city is satisfactory. New colonies are coming up everyday and they are being regularized by the Master Plan. These colonies are the home to the migrating work force to the city.
- There is heavy migration of the people from outside the city as Aligarh is growing as industrial and learning centre. The people within the city are moving to the civil lines to get a better quality of life away from the noise and congestion of the old city. They are fueling the growing apartment market in the city.
- The cottage industries in the city are concentrated in the heart of the old city at Upper kot area. These industries are a nuisance in the old city area. they are not only polluting the environment of the old city but have made the old city area inhabitable.

- High noise pollution is followed by air, water and land pollution. The environmental quality has depreciated further due to absence of green areas. It is difficult to spot even a single tree.
- People are fleeing the old city area and moving to the civil lines area.
- These industries also employ a large number of the work force. They are not only a problem to the residents but they are taking a set back due to their present location. The routes for procuring raw material and supplying finished goods are narrow and heavily congested.
- Most of the industries employ 6-10 labourers and many operate with less than 5 labourers. Their size is small. The turnover and the net profit of the industries is also low. Shifting them to another location may not be the best option.

CONCLUSION

An amicable solution is needed to solve the problem in such a way that the industry owners shift their operational base willingly. This can only happen when the new location has attractive incentives and operation from the old city becomes economically unfeasible. The proposed site should not be very far away from their present place of work. The people are used to work at their homes. Travelling long distances to their place of work, as happened at Talanagari will not be a very encouraging proposal. The routes of procuring raw material and supply of finished goods should be well developed and maintained. The industries should be provided with better infrastructure and financial loans to change their location. The solution is needed both at the policy level and the town planning level such that it is technically viable, economically feasible, practically implementable and socially acceptable.

CHAPTER 7: APPLICATION OF THEORY

7.1 SYSTEMS THEORY

Systems theory has been applied to understand the problems and propose the solutions in the present investigation. According to J. W. Forrester a system is “a group of parts that operate together for a common task”. All the parts of the system are called sub systems of the system. The sub systems of a system are interdependent and interrelated. Problem in any part of a system affects all the sub systems of the system and the system as a whole. So in order to understand a system one needs to study and understand the various sub systems of the system. Only after understanding the inter dependence and interrelationship of the various sub systems of a system can one propose solutions for the problems in a system.

7.2 URBAN SYSTEM

There are many authors who view the city as a system and call it an Urban System. They have also identified various sub systems of an Urban System. Snell and Shuldiner have identified the four sub systems of an Urban System as follows:

1. Objects
2. Activities
3. Infrastructure and
4. Land

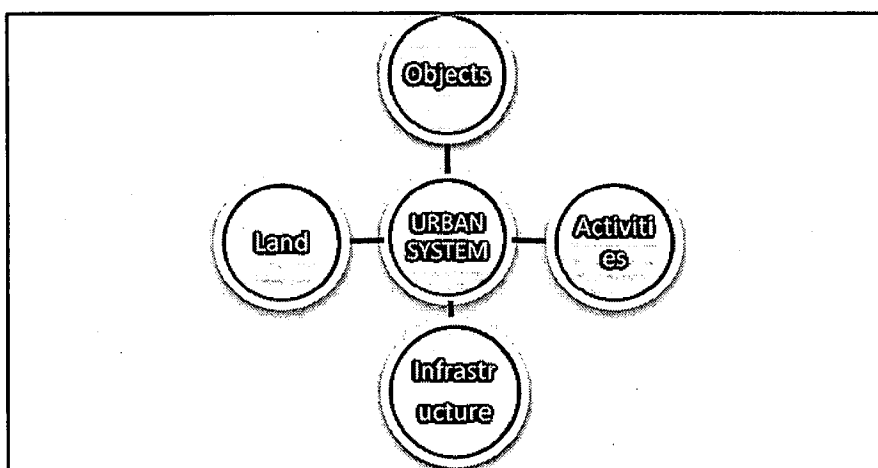


Fig. 7.1 Sub systems of an Urban System

According to Reif (1973) it is not possible to study any part of an urban system in isolation. All the sub system of an urban system are interdependent and interrelated. They interact with each other to make the urban system function. The various sub systems identified by him are as follows:

1. Social sub system
2. Population sub system
3. Economic sub system
4. Politic sub system
5. Administrative sub system etc.

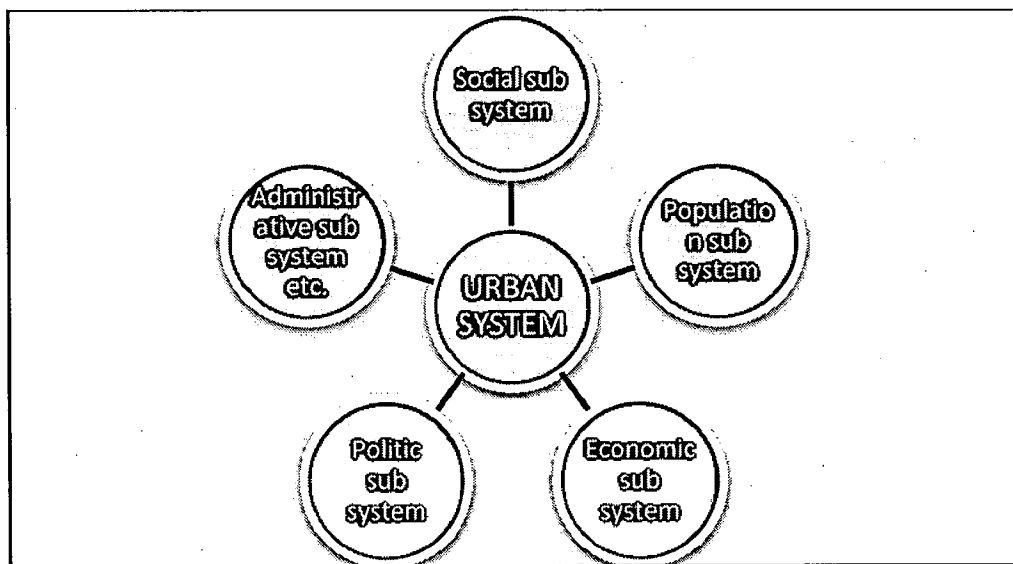


Fig. 7.2 Sub systems of an Urban system

According to Dr. V. Devadas and Nand Kumar (2007), “a system functions with the interaction of several of its sub systems. The sub systems of a system are interdependent and interrelated. If one of the sub system becomes defunct its effect can be seen on the entire system over a period of time. Similarly if one of the sub system takes a lead role its effect can also be seen on the whole system over a period of time”. They identified the following sub systems in an urban system:

1. Physical sub system
2. Social sub system

3. Economic sub system
4. Infrastructural sub system
5. Environmental sub system
6. Ecological sub system
7. Institutional sub system

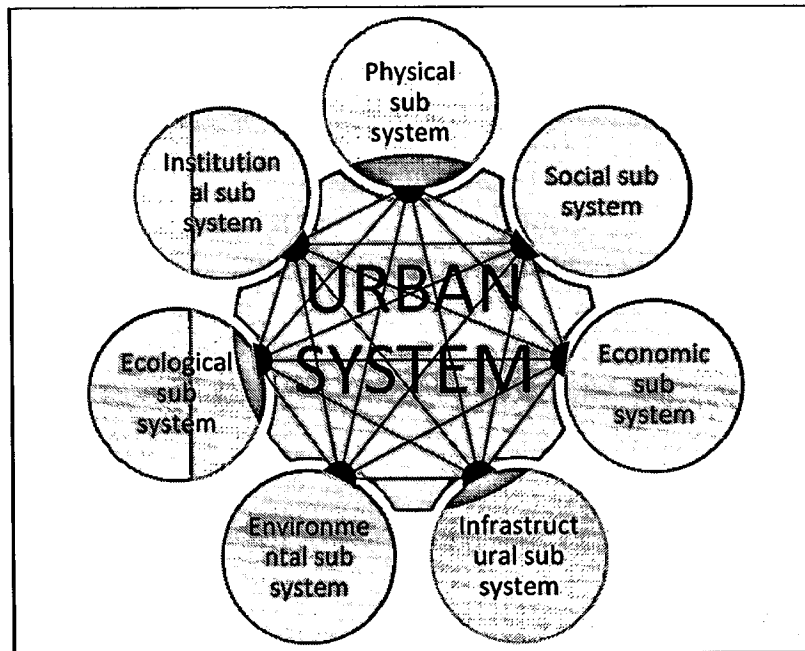


Fig. 7.3 Sub systems of an Urban system

The above classification is used to study and understand the Urban system in Aligarh city.

7.2.1 PHYSICAL SUB SYSTEM

Physical sub system in itself consists of an entire array of sub systems. The following are the sub system of a Physical sub system:

1. Location
2. Physiography
3. Climatology
4. Land use
5. Buildings
6. Communication facilities

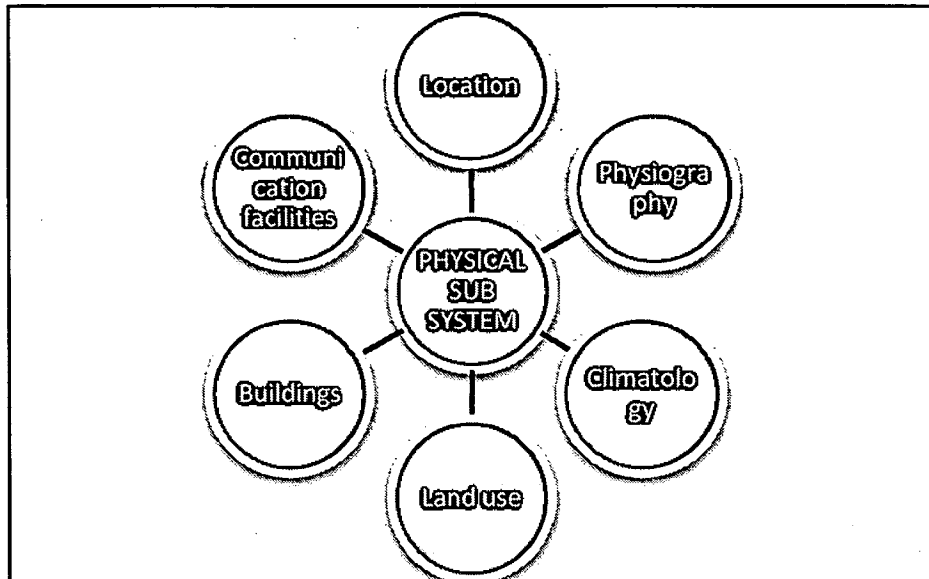


Fig.7.4 Sub systems of Physical sub system

7.2.2 SOCIAL SUB SYSTEM

The Social sub system consists of 3 sub systems. They are as follows:

1. Population
2. Housing
3. Community facilities

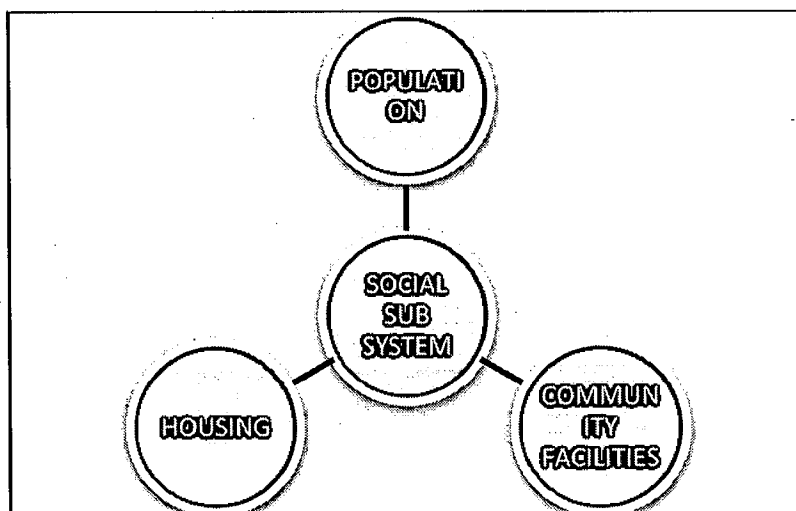


Fig.7.5 Sub systems of Social sub system

All the above sub systems of the social sub system are inter related and inter dependent. These all working together make up the social subsystem in an urban system.

7.2.3 ECONOMIC SUB SYSTEM

The following are the sub systems of the economic sub system:

1. Industries
2. Commerce
3. Labour force

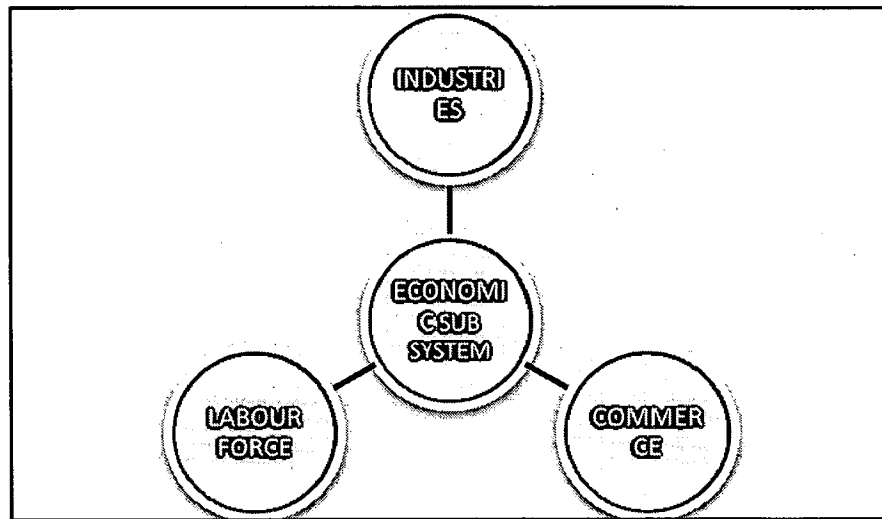


Fig.7.6 Sub systems of economic sub system

The Economic sub system again has a number of sub systems in an urban area. The three sub systems of an economic sub system in an urban area are industries, business and commerce and labour force. These are the pillars of city economy. The labour force in the city is distributed in either of these 3 sectors. The products of industries are bought and sold by the business and commerce activity. The labour force works as manpower and helps to run the businesses and industries.

7.2.4 INFRASTRUCTURAL SUB SYSTEM

The following are the sub systems of an Infrastructural sub system:

1. **Public utilities:** includes the water supply, sewage and drainage, solid waste disposal, roads and highways, waterways, airways, etc.
2. **Public services:** includes the telegraph, mobile, faxes, postal telecom, radio broadcast, television broadcast, internet, etc. these services keeps the urban area in touch with the surrounding world.
3. **Public facilities:** includes the schools, colleges, hospitals, street standards, parks and recreation, fire station, post office, telegraph office, police station, etc. facilities are a part of the infrastructure of the city.

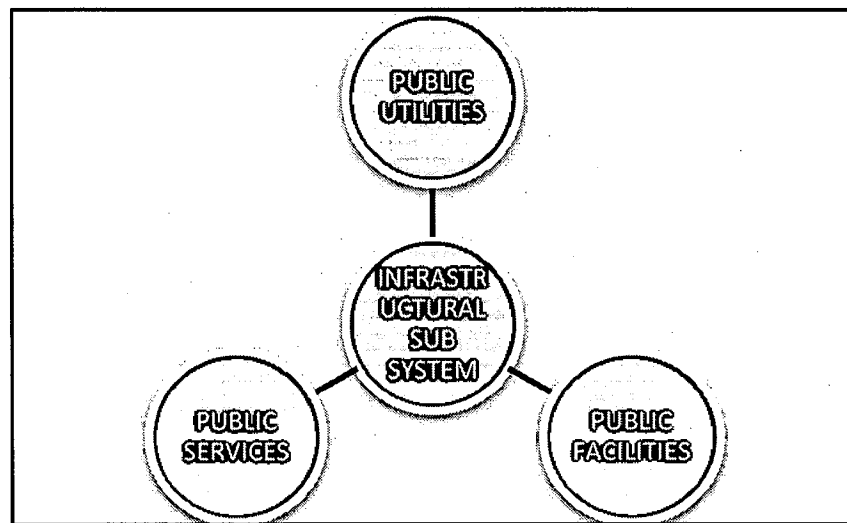


Fig. 7.7 Sub systems of an Infrastructural sub system

7.2.5 ECOLOGICAL SUB SYSTEM

The following are the sub systems of an Ecological sub system:

1. Natural environment
2. Man-made environment

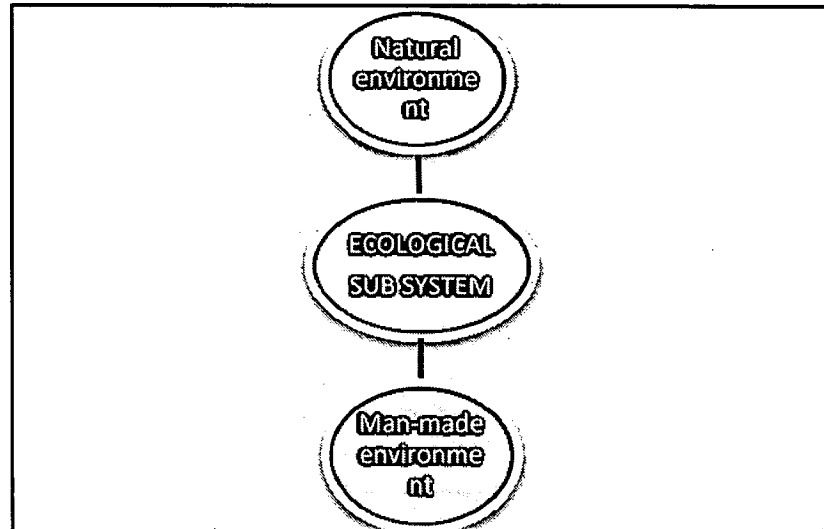


Fig. 7.8 Sub systems of an Ecological sub system

The above sub systems interact with each other to form the ecological system or the ecosystem. The natural environment consists of the abiotic and biotic sub systems while the man-made environment consists of the physical and non-physical sub systems.

7.2.6 ENVIRONMENTAL SUB SYSTEM

The following are the sub systems of an Environmental sub system:

1. Air
2. Water
3. Land
4. Noise

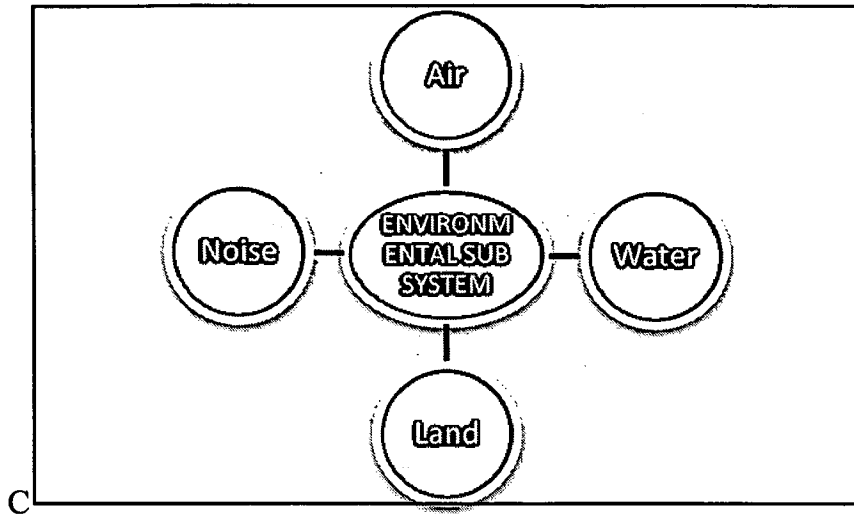


Fig. 7.9 Sub systems of an Environmental sub system

The above sub systems of the environmental sub system play an important role in maintaining healthy living conditions in an urban area. Disturbance in any of the above sub systems leads to adverse effect on the health of the residents of the city.

7.2.7 INSTITUTIONAL SUB SYSTEM

All the institutions of an urban area are included in this sub system. They perform the functions of administration as well as social service. The institutions of an urban system can be classified as follows:

1. Administrative institutions
2. Educational institutions
3. Health care institutions
4. Recreational institutions
5. Financial institutions
6. Religious institutions

The institutions play an important role in the planning and development of industries. The institutions of an urban system working in co-ordination to each other is the key for the development of an urban area.

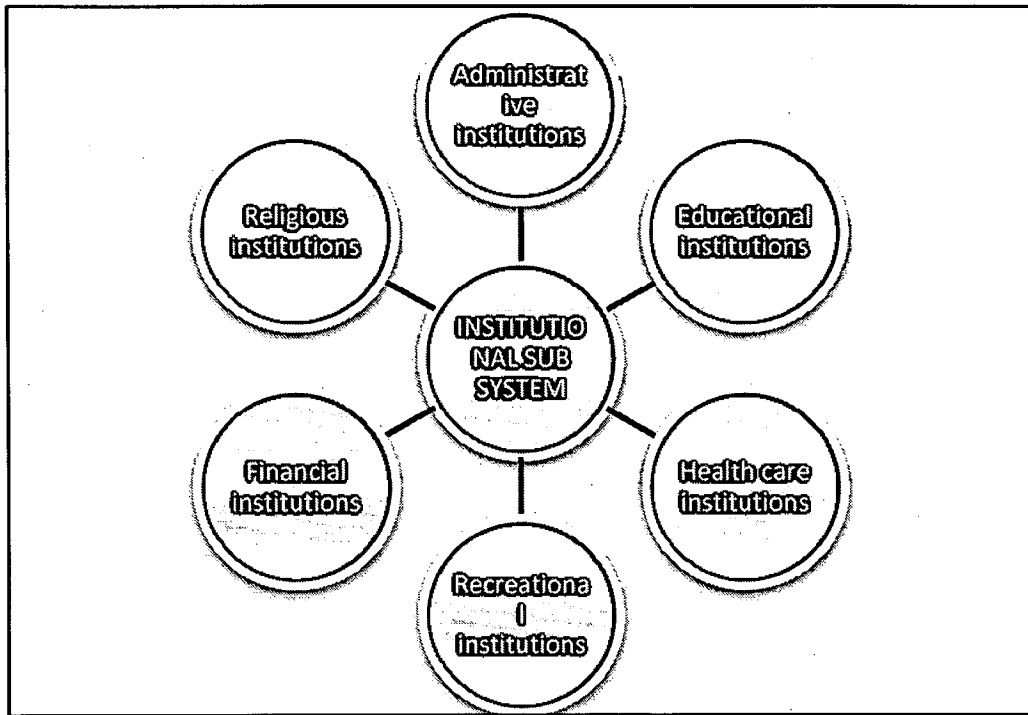


Fig. 7.10 Sub systems of an Institutional sub system

7.3 THE THEORY OF LOCATION OF INDUSTRIES, 1909

The theory of location of industries (1909) was given by Alfred Weber. It has been used since then to decide the optimum location of industries for a long time. This theory shall be employed in the present investigation to decide the optimum site for the rehabilitation of the cottage industries in Aligarh city. The location theory takes into account the following features to decide the low transportation cost of raw material and labour:

1. Proximity to the market and sources of raw material to reduce transportation costs.
2. Industry may be located at a place where cheap labour is available which justifies the higher transportation cost.
3. Agglomeration and deglomeration.

7.3.1 Proximity of market and labour

Weber developed a material index based on the weight of intermediate product to the weight of raw material. The point of optimal transport was based on the cost of distance to the material index. Weber developed a model placing market and the sources of raw

material on the three corners of a triangle and the industry in the centre of the triangle. In the figure below point P represents the industry. Point M represents market, points C1 and C2 represent the sources of raw material. The point P can be shifted towards the point which exerts the maximum pull.

7.3.2 Proximity of cheap labour

Sometimes the location of industry is governed by the location of cheap labour. The cost of bringing labour to the industry is higher than bringing the industry to the labour. Other constraint may be the immobility of skilled labour. In such conditions if the transportation of labour is costlier than the transportation of raw materials the industry is located according to the proximity of the labour. Outsourcing is a relevant example in the world today. Many industries have shifted their base of operation to developing countries because of the availability of cheap labour in abundance.

7.3.3 Agglomeration and deglomeration

Agglomeration or concentration of industries occurs when there is sufficient demand for support services for the industries such as auxiliary industries, service industry, schools and hospitals, etc. this benefits all the industries in the agglomeration and helps in the smooth functioning of the industries. Over a period of time the cost of living rises, too many industries leads to shortage of labour, higher wages, unaffordable land prices, etc. So the industries begin to leave the agglomeration due to the above problems. This is called deglomeration of industries.

CHAPTER 8: RESULTS AND DISCUSSIONS

8.1 INTRODUCTION

This chapter shall deal with the results of the analysis in chapter 6. The analysis was made covering various aspects of the cottage industries in Aligarh city and the socio economic condition of the workers and owners of the industries. Now for further investigation systems theory model proposed by Dr. V. Devadas and Nand Kumar shall be employed. The analytical results shall be divided into the seven sub systems of the urban system. They shall be understood by studying their inter relationship with one another. The functioning of the various sub systems of the urban system and their interrelationship shall help us to understand the problems in various sub systems and how they are affecting other sub systems in general and the industries in particular.

8.2 SUB SYSTEMS OF URBAN SYSTEM IN ALIGARH CITY

The following are the sub systems of an urban system:

8. Physical sub system
9. Social sub system
10. Economic sub system
11. Infrastructural sub system
12. Environmental sub system
13. Ecological sub system
14. Institutional sub system

8.2.1 PHYSICAL SUB SYSTEM

Physical sub system deals with the distribution of land uses. In the present investigation the land use aspects concerning the industries shall be discussed. The industries in the old city area of Aligarh have developed intensely in the residential areas. The residential areas have narrow lanes, congestion, over-crowding, frequent traffic jams and various other problems. It has become unfeasible to operate the growing industries in such areas.

There is no longer any land for expansion of the industries or the residential areas. Now the solution for this problem should be looked upon from two angles.

1. Moving away the residents
2. Moving away the industries

1. Moving away the residents: One of the approaches can be moving away the residents from the old city area and declare it an industrial site. the following are the advantages of this approach:

- This will free up additional land for the industries.
- The residents can be relocated to some other site.
- This shall save them from the ill effects of the industries.

The following are the problems that shall arise by the removal of residents and converting the old city area into a industrial are for small scale and light industries.

- The industries operating from the heart of the city shall pose a problem to the neighbouring areas. The incoming and outgoing traffic shall remain to be a cause of concern for the city dwellers. The congestion of the old city area shall remain as usual.
- There are many wholesale and retail market in the old city area. These too have to be shifted.
- In a short period of time these industries will take up all the additional land left vacant by the residents.
- Again the problem of shortage of land shall arise. The process adopted above shall have to be repeated again and again till the industries take up the entire core of the old city and there shall never arise an end to the problem.

So moving away the residents and the commercial market from the old city area, leaving aside all the issues related to relocation of this population may appear to be solution for easing up the pressure on the cottage industries, but it is short term, short sighted and cause for many other problems.

2. Moving away the industries: Moving the industries away have the following advantages:

- The land left vacant by the industries can be used to develop much needed green space in the old city area.
- Plans for the widening of roads which have been pending for a long time can be implemented.
- The industrial traffic moving away from the old city area shall reduce the traffic on the city roads.
- Removal of polluting industries and addition of green spaces in the old city area shall tremendously improve the environmental quality of the area.
- It shall stop the migration of the city residents to the civil lines area, preferring to stay in their old houses. This shall ease the pressure on the housing and bring down the rates. The old city area shall become a peaceful place to live.
- The industries moved to new site shall have to opportunity to expand and acquire land as and when the need arises.
- The movement of raw materials to the industries and the finished goods from the industries shall be hassle free. It will save the time needed to tackle the city traffic, thus bringing down the transportation cost and increasing the profit margin.

The problems related to the shifting of the industries area follows:

- The cottage industries generally operate from the houses of the owners. Changing this would be a problem.
- Some of the industry owners are unwilling to shift their base of operations. There may be protest and other social issues may arise in shifting the industries.
- The industrial site proposed at present are far away from their place of residence. The cost of travel to the industrial site is high.
- There is lack of infrastructure at the relocation sites. The small scale and cottage industries shall not survive if relocated to the site with lack of support infrastructure.
- The cost of relocation is high. Most of the industry owners do not have the necessary capital to start their industry afresh.

The above mentioned problems can be solved by the active role of the authorities involved in the relocation of the industries. The total number of cottage industries in the old city area of Aligarh exceeds 6000 units. These industries generally serve as ancillary industry to the medium and large industries. They are involved in manufacture of parts which are supplied to the large assembling units. The various processes involved in the manufacturing of a single product are carried out by different units. Many of these processes are pollution free. They do not create any kind of undesired air, water or noise pollution. These industries have small turn over. According to the household survey analysis, 5% of the industries have an annual turnover of less than 5 lakhs. These industries are small in size, operational base, pollution and in no condition to change their base of operation. Such industries should be allowed to operate inside the city after careful inspection of their operation. Out of the 6000 industrial units in the city only 1100 units were registered. The registration of the industries should be taken seriously and the offenders should be dealt with strictly.

Using the theory of location of industries the following criteria need to be adopted for the selection of suitable site for the industries:

1. Proximity to raw materials
2. Proximity to market
3. Proximity to labour
4. Agglomeration and deglomeration
5. Wind direction

1. Proximity to the raw materials: The raw material for the industries is procured for the larger part from Faridabad and Meerut. Raw material procured from Mumbai is in low quantity and its share is declining. So Mumbai can be ruled out and needs to be decided to keep the industries on the Faridabad or Meerut road. As both these places supply a large portion of the raw materials for the cottage and small scale industries, it would be appropriate to locate the industries in close proximity to these routes. Locating the industries away from these routes shall generate unnecessary traffic across the city increasing the traffic congestion on the city roads. The industries should be located on the proposed bypass road as it would curtail the through traffic from the city and reduce the movement of heavy vehicles within the city limits.

2. Proximity to the market: Another important parameter while locating the industries is the proximity to the market. It reduces the cost of transportation of the finished products from the industries to the market. As the finished products from the small scale and cottage industries in Aligarh are supplied all over the country it shall not be major factor in location of the industries.

3. Proximity to labour: The cottage industries in Aligarh are labour intensive. They employ a large number of work force of the city. So the industries shall be benefitted if the new site is located in close proximity to the residential areas of the labourers. The concentration of labour is in and around the upper kot area. the new site should be located closer to this area.

4. Agglomeration And Deglomeration: The cottage industries in Aligarh city are accustomed to work in agglomeration as has been evident from the long history of their operation. The present problems have made it mandatory for shifting their base of operations.

5. Wind direction: Wind direction plays an important role in the location of industries. The industries should be located as to prevent the flow of polluted air from the industrial areas to the residential areas. The small scale and cottage industries in Aligarh city do not produce excessive amount of air pollution. Even though considering the future development of industries and the residential areas of the city the new industrial site should be located opposite to the prevailing wind direction in the city. The prevailing wind direction at Aligarh city is north-east.

8.2.2 SOCIAL SUB SYSTEM

Social sub system plays an important role in the development of an urban system. The population that is literate and skilled in various trades has greater chances of development. The analysis of the survey schedule indicates that the city population engaged in cottage industries lacks in technical education. The dropout ratio is very high after secondary education. The number of graduates and post graduates is very low. Even people with proper training in their respective trades are rarely found. The workers in the industries do not have professional training. This affects the output capacity of the workers. Absence of higher education is also observed in the industry owners. They too lack proper management and marketing training. This keeps them at a disadvantage to their global counterparts. Arrangement should be made to train the industrial workers as well as industry owners in order to make them proactive in their fields and make them able to compete in the global market. There is no dearth of skilled labour in Aligarh but a little training and support can go a long way turning Aligarh into a major lock exporter.

Provision of housing for the industrial workers is a must. The housing conditions of the workers are satisfactory as of today. The growing family size is compelling people to shift their residence to civil lines area. At present the cottage industries are family

dominated enterprises and mostly the residents of the city are working in them. But there is also a sizable population of migratory workers in the cottage industries which is most likely to go up as the cottage industries enter a new phase of development. Not only shall there be more migratory workers but there shall arise a group of migratory entrepreneurs. All this will lead to demand for housing. For any sustained growth of industries in the city it is necessary to make provision for the additional population. These residential areas shall best serve their purpose if they are developed near the industrial site. This shall not only reduce the travel distance for the industrial workers, cutting down city traffic, but shall also reduce the rising housing pressure in the civil lines area.

Health is another issue that threatens the social life of any urban area. There are high incidences of tuberculosis in the industry workers. This happens due to continuous inhaling of smoke and dust produced in the industries. There is no provision of emergency medical aid in the cottage industry area at present. Accidents are likely to happen in industries. Measures should be adopted to give emergency medical aid in times of accidents.

Lack of open space inhibits any chance of community get together or social mingling. As there are no open spaces or parks in the old city area the social life is mostly indoors. Attempt should be made to improve the present situation and clear some breathing space in the old city area.

8.2.3 ECONOMIC SUB SYSTEM

From the schedule analysis it can be observed that more than 80 percent of the workers are engaged in lock industry or hardware industry. The number of industries with an annual turnover of less than 15 lakhs is around 70% while the annual net profit less than 5 lakhs is 75%. So the industry size is small and needs financial support from time to time in the form loans to buy new equipments and upgradation of technology. This financial support is not forthcoming as the loaning agencies are hesitating to invest due to the small size of the industries. Industrialists are also not fully aware of the loan options available to them through various government agencies. They are skeptical to borrow

money from the banks. This mindset needs to be changed and shall need active role of the government agencies and NGO's. Once this obstacle is overcome industry owners shall willingly agree to shift their base of operation.

8.2.4 INFRASTRUCTURAL SUB SYSTEM

Building proper roads is not as difficult as maintaining it. It is evident by the schedule analysis. The lack of proper maintenance turns even a well built road into a pot hole in a very short time. The roads in industrial areas carry heavy traffic. So they need to be properly maintained. Water supply has not been a problem as ground water is available in plenty and the same can be used. Power supply is a nuisance. The daily power cut varies from 8-9 hours. The work timing for industries is generally 8a.m.-5p.m. There is 3 hours power cut in between these timings. The loss to the industries is tremendous. The new industrial site should have adequate provision of power supply to eliminate this loss. There is no provision for loading-unloading, truck parking or raw material storage. These facilities if provided at the new site shall attract not only the cottage industries but industries from other areas as well.

8.2.5 ENVIRONMENTAL SUB SYSTEM

The industries being proposed at the new industrial site are bound to produce air, water, land and noise pollution. The pollutants are in the form of smoke, industrial water containing harmful chemicals, noise from the machines in the industries, etc. This shall not only harm the workers in the industries but if not checked in time shall lead to adverse impact on the environment. It can also become a nuisance to the surrounding areas. Effective steps need to be taken to nip the problem in the bud.

8.2.6 ECOLOGICAL SUB SYSTEM

In the old city area it is difficult to find a tree let alone an ecosystem. Steps shall be taken to develop ecological system in the new industrial site.

8.2.7 INSTITUTIONAL SUB SYSTEM

The institutions working for the revival of cottage industries in the city are still far from realizing their goal. The NSIC is helping the industries by conducting various workshops for the industry owners and helping them procure loans for the purchase of equipments. But the root of the problem is very deep and they need to take an integrated approach to arrive at a solution. Steps need to be taken not only at the city level but at the state level as well as the industrial development in the city comes directly under the State Government.

8.3 CONCLUSION

The above discussion indicates that the problems in the cottage industry development have multiple causes. They all need to be addressed simultaneously to achieve a lasting solution. The proposed solution should be an integrated development plan covering all the aspects of an urban system.

CHAPTER 9: PROPOSALS AND RECOMMENDATIONS

9.1 INTRODUCTION

The various sub systems of the urban system have been thoroughly analysed in the previous chapters. The problems in each of the sub systems were discussed in detail. These problems are interrelated and interconnected. All the problems of each and every sub system not only affect the other sub systems but the entire system as a whole. These problems shall be dealt with in the present chapter and plausible recommendations shall be made to overcome them.

9.2 PHYSICAL SUB SYSTEM

The following steps needs to be taken to improve the conditions at the physical level in Aligarh city:

- The cottage industries in the old city area have grown and gone beyond from being a cottage industry anymore. The old city area needs to be preserved and improved. This can never be done with the industries operating from it. All the polluting small scale and cottage industries should be shifted away from the old city area. The non-polluting industries should be allowed to operate in the area for the initial period of 2 years of their operation.
- The industries allowed to operate in the old city area should be subject to two conditions i.e. pollutant emission and annual turnover.
- The non-polluting industries allowed to operate in the old city area should obtain permit to do the same. The license of these industries should be renewed from time to time after proper inspection from the authorities.
- After the initial 2 year period has expired these industries should also be relocated to the new industrial site. Such a provision shall allow new small time entrepreneurs to

establish themselves with little capital investment and can later on shift to the new site.

- Any industry that has expanded its base of operation should be immediately removed from the old city area.
- Any industry operating without proper permit in the old city area should be closed down and legal action should be initiated against the offender.
- A separate site has been marked for the rehabilitation of the industries. This site is in between the Pauda road and G.T. road. It is also in close proximity to the present location of the cottage industries in the Upper kot area.
- The site development shall be in two phases. This will reduce the investment required for site development and developed properly shall set a benchmark for the development of second phase.
- The site is buffered by the provision of a green belt on the periphery to reduce the impact of industries on the surrounding areas that shall come up in near future.
- The proposed green belt shall not only contain the harmful effects of industries but shall provide much needed breathing space for the residential areas proposed near the industrial area for the industrial workers.
- The industries should be notified and given time to shift once the site allotted for their development is fully developed and functional. An industrial site with lack of basic infrastructural facilities hampers the shifting of industries. Moreover the lack of infrastructure leads to installing of industrial operations and can lead to great loss to the industries.

- The allotted site development can be a government-private partnership where the government shall facilitate the availability of land for development and the private developers can develop the site.

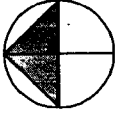
9.3 SOCIAL SUB SYSTEM

A lot needs to be done at the social level as the development of industries is greatly hampered by the improper social development of the city. The following measures need to be followed for the development of cottage industries in Aligarh city

9.3.1 Housing

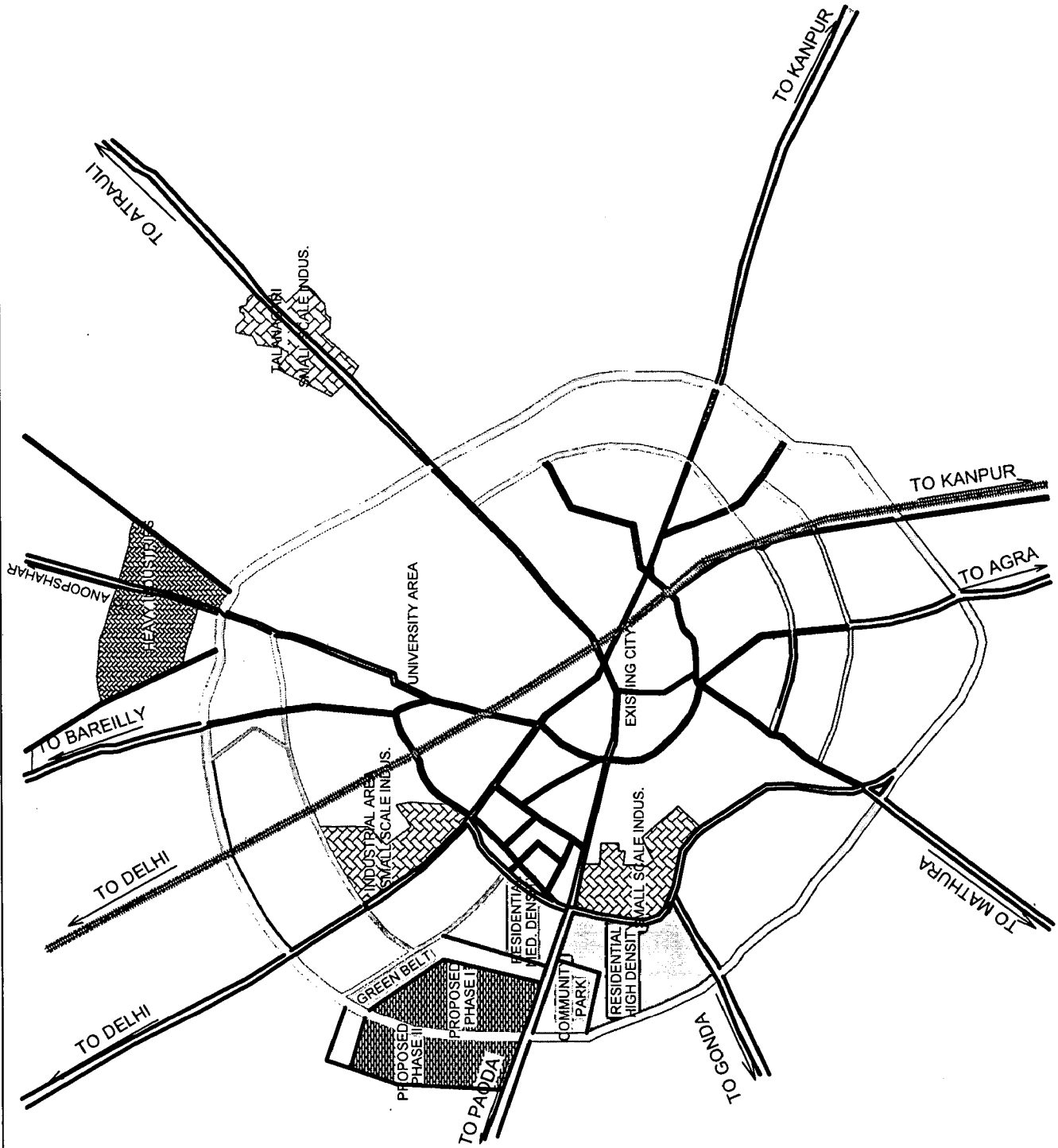
The following steps need to be taken to tackle the housing issue for the industrial workers:

- A medium density residential is proposed near the new industrial site for the industry owners. The residential developed such shall follow the UDPI guidelines in planning of infrastructure.
- A high density residential area is proposed to be developed for the industrial workers. The high density development shall be in the form of group housing. This shall not only create more number of dwelling units/square area of land but shall reduce the cost of houses. Many dwelling units can be made available at rents for the migratory workers.
- Another reason for proposing a high density residential area for the industrial workers is that mass public transport is only feasible in a new area if it has substantial population to support the services. The absence of public transport facilities is a major problem faced in any newly developed area. To make the public services operational at the earliest high density development is the best option. The ill effects of high density development can be overcome by suitably designing the infrastructure for the same. To counter the effects the high density pocket the surrounding areas should be kept medium or low density development.



S. NO.	SYMBOLS	LAND USE
1.	[Cross-hatch pattern]	SMALL SCALE INDUSTRIES
2.	[Diagonal lines pattern]	HEAVY INDUSTRIES
3.	[Horizontal lines pattern]	GREEN
4.	[Vertical lines pattern]	EXISTING ROADS
5.	[Dotted pattern]	PROPOSED ROADS
6.	[Horizontal lines pattern]	PROPOSED RESID. HIGH DENS.
7.	[Vertical lines pattern]	PROPOSED RESID. MED. DENS.
8.	[Cross-hatch pattern]	PROPOSED INDUSTRIAL SITE

TITLE: PLANNING FOR REJUVANATION OF COTTAGE	
INDUSTRIES IN ALIGARH CITY	
SHEET TITLE: PROPOSED INDUSTRIAL PLAN	
KHAN AMADUR RAHMAN	DATE- JUNE 2008
ROLL NO.- 062204	SCALE- 1:50000
MURP II YEAR	
DEPARTMENT OF ARCHITECTURE AND PLANNING	
IIT ROORKEE, ROORKEE-247667	



PLAN 9.1 ALIGARH CITY: PROPOSED INDUSTRIAL SITE(1:50000)

9.3.2 Education

The following steps should be taken to improve the education and training of the industrial workers and their children:

- There is need for a training institute that offers the industry related training to the workers. This will not only benefit the development of the industries but also reduce the number of dropouts from the schools. This can be in the form of an ITI training institute.
- A need for a polytechnic offering diploma in the courses related to the industries in the city will also go a long way in improving the condition of the industries in the city.
- Although there are ample number of institutes and colleges offering management program in the city but the products from these institutes need to be trapped and their skill needs to be utilized to plan the future development course of the industries in the city of Aligarh. The industrialists need to come forward for this. They can do this by opening some training and internship programs in their industry. The management students doing training in these industries shall be mutually beneficial for both.
- Reservation should be provided to the children of the industrial workers in the educational institutions.

9.3.3 Health

The following measures need to be adopted to safeguard the health of the industrial workers:

- The existing hospitals in Aligarh city are sufficient to take care of all the developmental needs of the city.

- But there is no facility for first aid provision to deal with the accidents in the industries which happen from time to time. A health centre at the industrial site will be beneficial for all the workers of the industry.

9.3.4 Community Facilities

The following measures need to be adopted in terms of community facilities for the industrial workers:

- The city is in dire need of some recreational facilities such as parks and playgrounds.
- The parks should be located near the industrial area to reduce the air and noise pollution. An interesting way of achieving the above goal is to plant orchards around the industrial site.
- The residential areas should have some open space which can be used by the families of the industry workers. These facilities can go a long way in not only improving the health of the industrial workers but also providing them a better standard of living.

9.4 ECONOMICAL SUB SYSTEM

The following are the proposals for the economic development of cottage industries in Aligarh city:

- Financial provision should be made to the industries to cover the cost for shifting of their operational base from the old city area to the new industrial site. This will include the cost of purchasing new land or renting an existing structure. This can be arranged by involving the banks that are already operating in the city.
- Under the fiscal support policy to tiny industries of the Central Government the cottage industries at Aligarh with a turnover of less than 1 crore are exempt from excise duty.

- The cottage industries at Aligarh with a turnover of less than 10 lakhs qualify for priority lending under the Central Government's credit support to tiny industries.
- The State Government shall provide a subsidy of 50% for purchase/import of technical know-how.
- The State Government shall also provide 50% subsidy for purchase of equipments and machinery to enhance production.
- A subsidy of 5% shall be provided by the State Government subject to a maximum of Rs. 50000 on loans from banks/financial institutions for purchase of machinery.
- Financial support is needed the most by the new entrepreneurs who have the will, the technical know-how, the essential training but lack of capital. These people if given the right amount of financial support can not only start their own industry and run it efficiently but they shall set an example to the other small time entrepreneurs.
- Fund shall also be required for the development of the industrial site and setting up the industrial infrastructure. This is a crucial phase for the success of any industrial development proposal because the amount of investment required is huge and the risk of failure is great.
- For the development of the industrial site the State Government shall provide 20% of the total investment or Rs. 2.5 crores whichever is less.
- The State Government shall also provide 50% of the investment in common facilities, recommended by the Industrial Associations, or Rs. 2 crores whichever is less.
- For the development of laboratories for quality control and research and development of products of industries the State Government shall provide 50% of the investment or Rs. 1 crore whichever is less. All the above investment limits by the State Government are far from adequate and should be revised.

- The private sector should be incorporated for the rest of the financial support for development of Industrial site.
- For the success of any future developmental proposal the authorities have to work extra hard to attract the investors. This can be done by projecting the industrial development at the regional level. Besides developing the site as rehabilitation for the cottage industries it can also be used to attract other major industries. The NCR boundary extends upto Khurja, a small industrial town, which is only 40 kms away from Aligarh city and connected by the G.T. road. This element can be exploited and used to attract the investors to Aligarh.

9.5 INFRASTRUCTURAL SUB SYSTEM

The following infrastructural facilities need to be developed at the industrial site:

- Roads should be wide enough to accommodate the peak hour traffic at the industrial site. The hierarchy of road needs to be decided in accordance to the UDPFI guidelines.
- An efficient sewerage system is a must for the sustained and healthy growth of the industrial area.
- Sewage treatment plant should be installed to treat the industrial sewerage. It should be treated and the harmful substances should be separated from it before disposing it off. The treated water can then be utilized to irrigate the proposed green spaces at the site.
- There should be adequate provision of drinking water at the industrial site. The main source of water supply is ground water. At present there is no shortage of water supply at Aligarh but for the sustainable growth the water should be recycled.

- The power supply has been a nuisance to the industrial development in Aligarh. Uninterrupted power supply should be provided to the industrial site from an industrial feeder. Any feeder receiving more than 75% of the industrial load is declared an industrial feeder and is exempted from power cuts.
- Provision of loading and unloading platforms shall help in regulating the incoming and outgoing goods from the industrial site.
- An efficient transportnagar near the industrial site shall ease the vehicular load at the site and make the industrial proposal more attractive.
- Adequate godowns and storage facilities should be provided at the industrial site. This facility helps to maintain the flow of raw material to the industries and gives security to the industrial set up. Storage facilities are used to create buffer supply which is used when the supply is low.

9.6 ENVIRONMENTAL SUB SYSTEM

The following steps need to be taken to develop the environment of the industrial site and make the industrial development environmentally sustainable:

9.6.1 Air pollution

The following measures need to be adopted to curb the air pollution caused by the industries:

- In-house treatment facilities such as filters should be made mandatory for all the industries to reduce air pollution.
- Adequate number of trees should be planted to reduce the air pollution in the industrial site.

- Trees with dense foliage should be used to create a green belt around the industrial site. This belt shall act as a buffer to cut off air pollution and noise between the industrial site and the surrounding areas.
- Trees planted along the roads help to cut down the vehicular pollution within the industrial site.

9.6.2 Water pollution

The following measures need to be adopted to curb the water pollution caused by the industries:

- The polluted water from the industries can be carried on to a Central Effluent Treatment Plant for treatment. The water coming out of the plant can then be used for various irrigational purposes on and off the site.
- Nickel is one of the hazardous chemicals released as waste during the manufacturing of locks. Special measures need to be adopted to remove it from the waste water before it is discharged.

9.6.3 Noise pollution

The following measures need to be adopted to curb the noise pollution in and around the industries:

- The noise limit in the industries should be set up to 85 decibel as exposure to such noise level causes negligible effects over a long period of time.
- Trees planted around the industries not only cut down the external noise to the buildings but also prevent the noise generated within the industries.
- The machineries producing noise in the industries should be covered with noise absorbing materials.

- The vibration of the machineries is responsible for a lot of noise. The vibration can be reduced by using dampeners.
- The noisy areas in the industries should be isolated from rest of the industrial set up using sound absorbing materials and techniques. The workers in the area should be provided with ear plugs.
- Dense shrubs planted on the dividers not only reduce the glare from the opposite vehicles but also improve the aesthetical quality of the roads.
- The road junctions can be used to create beautiful landscape and make the industrial environment cheerful. Beautiful flowerbeds, green lawns alongwith water fountains and cascades go a long way to achieve the above objective.
- The recycled water can be used for developing greenery and creating various landscaping features

9.7 ECOLOGICAL SUB SYSTEM

The following are the steps should be taken to promote development of the ecology in the industrial area:

- According to the UDPMI guidelines Aligarh qualifies under the city with a population greater than 5 lakhs. So it needs a zoological and botanical garden. These gardens will best serve their purpose if they are developed near the industrial site. They will not only prevent the city from the harmful effects of the industries but shall also be a source of recreation for the city dwellers. They will create an ecological balance in the area.
- The green spaces within the industrial area can be helpful to generate local ecosystem.

9.8 INSTITUTIONAL SUB SYSTEM

The following steps need to be taken to create the right institutional environment for the development of cottage industries in Aligarh city:

- The Central Government should reserve the items produced in the cottage industries of Aligarh to be produced in small scale industry sector.
- The State Government should include Aligarh among the districts exempt from stamp duty and registration charges for purchase of industrial land.
- The Uttar Pradesh State Industrial Development Corporation should provide 50% reservation for the small scale and cottage industries in the newly proposed Industrial site in Aligarh city.
- The State Electricity Board should exempt the power supply to the Industrial Estates from power cuts.
- The Aligarh Development Authority should take initiative to implement the proposed developmental schemes for the cottage industries in the city. It should notify the industry owners well in advance to shift their industries from the old city area to the industrial sites.
- It should demarcate the land in the Master Plan under rehabilitation of cottage industries.
- It should acquire the land required for the new industrial site in consultation to the Uttar Pradesh State Industrial Development Corporation. Acquisition of land is a lengthy and cumbersome process. Once the land acquisition is done then comes the site development.

- The Aligarh Development Authority should also propose residential land for the industry workers and industry owners.
- The State Education Ministry should make provisions for imparting education to the children of the industry workers. It should propose more number of technical institutes in the city and make reservation for the children of the industry workers in these institutes.
- Registration of industries should be made mandatory for all the industrial units. Process of registration of industries should be simplified. Single window operation should be implemented to cut down the lengthy bureaucratic process involved in the registration to operation process of industries.
- The Uttar Pradesh State Industrial Development Corporation should promote the products produced in the cottage industries at Aligarh.
- The Uttar Pradesh State Industrial Development Corporation should organize more number of buyer-seller meets and exhibitions to market the industrial products.
- The NGO's working in the area should be used to promote the efforts of improving the industrial situation by convincing the industry workers of the effectiveness of the developmental proposals.
- Industrial Co-operative should be formed which should be made responsible for the maintenance of the industrial site once it is fully developed and operational.

9.9 CONCLUSION

The planning for rejuvenation of cottage industries is not only a problem of spatial and economic planning but its attachment to the residential areas of the city makes it a complex social issue. The location of these industries in the heart of the city makes them an environmental hazard. The absence of an open space and dense concrete jungle has made the life in the old city miserable. The situation has aggravated further by the authorities turning a blind eye to all these problems. All the proposals and

recommendations made above can be implemented effectively only when a dedicated effort is made by all the players involved i.e. the Central government, the State Government, the city authorities, the industry owners and the industry workers to arrive at a solution. An integrated solution involving all the sub systems of the Urban System shall definitely lead to rejuvenation of the cottage industries in Aligarh city.

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APPENDIX

SCHEDULE USED FOR SURVEY

1. Demographic Characteristics:

1.1 Name of the family Head:.....

Age..... Occupation..... Education..... Income.....

1.2 Religion:.....

1.3 Present Address:.....

1.4 Permanent Address:.....

1.5 Caste:

1.6 Family Details:

	Name of person	Relation- ship with the Head	Age (years)	Married (Yes/No)	Max. Edu. Attained	Monthly Income	Primary Occupat- ion	Sec.Occ- upation	No. of days employed in a year
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									

1.7 Monthly Expenditure in (Rs./Month)

- a. Food..... b. Education.....
 c. Recreation..... d. Drinking.....
 e. Transportation..... f. Loan Repayment.....
 g. Clothes..... h. Health.....
 i. Rent..... j. telephone.....
 k. Saving..... l. Any other.....

Total:.....

Household Appliances:

Refrigerator.....T.V.....A.C.... Stove..... Mixer/Grinder.....Computer.....Washing Machine.....
 Cooker.... Cooler.... Geyser... Microwave..... Solar cooker..... Tape recorder... Any
 other.....

Energy

- a. LPGf. Charcoal.....
 b. Petrol.....g. Fuel wood.....
 c. Diesel.....
 d. Electricity.....
 e. Kerosene.....
 Total:.....

4.2 Water Supply:

- Supply system: Public/ well/ Own source/ both
- Time of supply (in hrs.):.....
- Use of equipments: filter/ zero B/ Aqua guard.....

4.3 Electricity:

- Available/ unavailable
- Metered/ Non-metered
- Overhead poles/ underground cables
- Tariff: monthly/ Flat rate
- Hours/Days of availability:
- voltage fluctuat

4.4 Drainage/ Sewerage:

- Availability of:
 - a) Septic Tank
 - b)Soak pit
 - c) Sewer
 - d)No facility
- Drains:
 - a)Open
 - b)Covered
 - (c) No drains
- Problem:
 - a) Overflow
 - b)Clogging
 - c) Bad odour
 - d)No Problem
- Overflow of drains during rainy season (Yes/ no)

4.5 Waste Disposal:

- Method of collection at house:
 - a) Storage container
 - b) dust-bin/ PVC bags
 - c) burning
 - d) throwing out
- Frequency of collection from the area:
 - a) Everyday
 - b) Alternate day
 - c) 3 Days
 - d) weekly
- Agency for collection:
 - a) Nagar Nigam
 - b) Private Agency
 - c) NGO

5. Environmental characteristics:

- Water quality:
 - a) Very good
 - b) Good
 - c) Moderate
 - d) Poor
- Air quality:
 - a) Very good
 - b) Good
 - c) Moderate
 - d) Poor
- Land quality:
 - a) Very good
 - b) Good
 - c) Moderate
 - d) Poor
- Noise Pollution:

a) Very high

b) High

c) Moderate

d) Low

• Quality of Life:

a) Very good

b) Good

b) Moderate

d) Poor

6. Treatment Facilities:

• Solid waste:

a) available

b) unavailable

• Waste water:

a) available

b) unavailable

Remark:.....